Boewter

The TMC Indexer ™(1.0)

User's Manual

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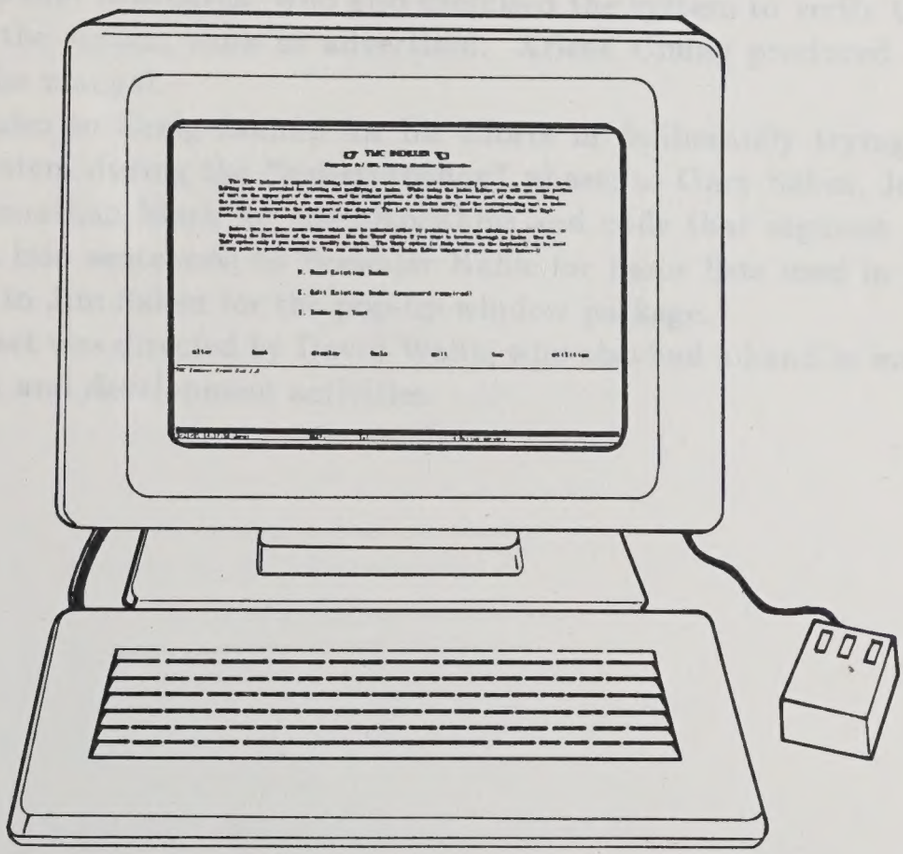


Acknowledgments

The TMC Indexer^{TM} is a product of the efforts of members of the TMC Knowledge Representation/Natural Language Group.

The original idea of the TMC Indexer^{TM} came from Howard Resnikoff, who also contributed along the way as the system was being developed. Most portions of the TMC Indexer^{TM} that actually create the index were designed and implemented by Paul Mott in early 1984. Paul followed this up with substantial amounts of experimentation, revision, and polishing over the next year. The user interface was implemented and integrated with the Indexer by George Robertson. The manual was almost entirely the work of Janet MacLaren, who also exercised the system to verify that all parts of the system work as advertised. Arlene Chung produced the artwork in the manual.

Thanks also to Craig Stanfill for his efforts in deliberately trying to break the system during the "bulletproofing" phase; to Gary Sabot, John Rose, and Jonathan Mark for the algorithms and code that segment the original text into sentences; to Brewster Kahle for name lists used in the system; and to Jim Salem for the pop-up window package.

The project was directed by David Waltz, who also had a hand in many of the design and development activities.

Contents

1 Introduction to the User's Manual **4**

2 Fundamentals **6**
2.1 Logging In On a Lisp Machine 6
2.2 Loading the Distribution Tape 6
2.3 Performing a Disk Save 10
2.4 Accessing the TMC Indexer^{TM} Interface 11
2.5 Booting the LISP Machine 13
2.6 The LISP Machine Keyboard 13
2.7 Using the Mouse 14
2.8 Exiting the Indexer 15
2.9 Logging Out of the LISP machine 15

3 Tutorial on the TMC Indexer^{TM} **17**
3.1 The TMC Indexer^{TM} Menu System 17
3.1.1 Mouse Menus of Operations 23
3.2 Review 25
3.3 How to Read an Index – Tutorial 26
3.3.1 How to Select a Term in the Text 29
3.3.2 How to Select an Entry in the Index 31
3.3.3 Inversions of Index Entries 31
3.3.4 How to Select a Previous Inversion 31
3.3.5 How To Select a Next Inversion 32
3.3.6 How to Find Index Entries 33
3.3.7 How To Find a String in the Text 34
3.3.8 How To Find a String in the Index 35
3.3.9 How to Mark and Unmark an Index Entry 36
3.4 How to Index New Text – Tutorial 37

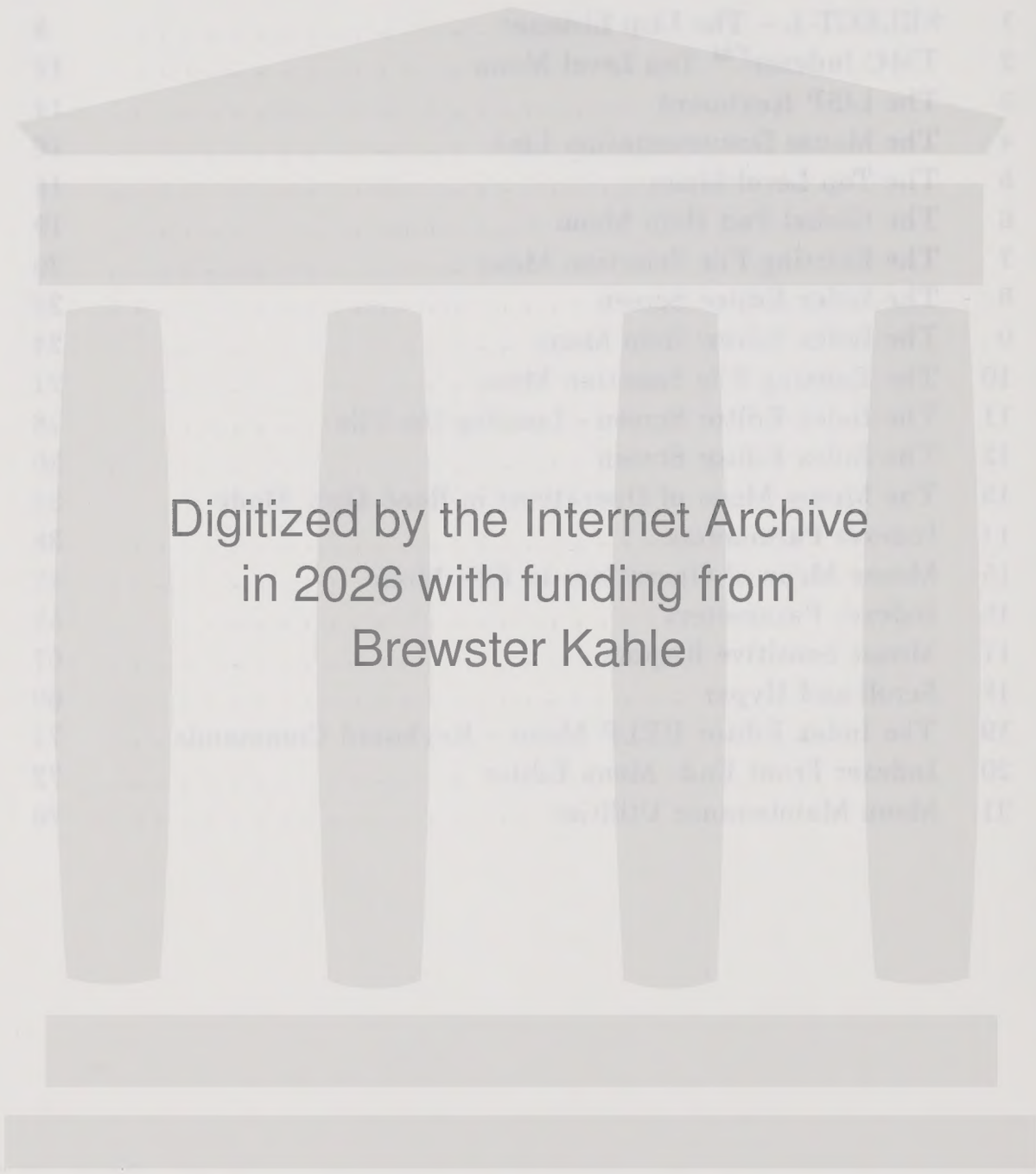
4 Editing an Index – An Advanced Operation **42**
4.1 Editing Options 43

5 Troubleshooting **49**

6 TMC Indexer^{TM} Features Description **52**
6.1 Indexing Parameters 52
6.2 The Structure of An Index 53
6.3 Multiple File Indexing 57
6.4 Mouse Menu of Operations in Read-Only Mode 59
6.5 Mouse Sensitive Regions 66
6.5.1 Left Wall Bars 66
6.5.2 More Above/More Below Bars 68
6.5.3 Scroll and Hyper-Scroll: Scroll Mouse Alternatives . 68
6.6 Altering Menus 70
6.7 Menu Maintenance Utilities 78

List of Figures

1 SELECT-L – The Lisp Listener 8
2 TMC Indexer^{TM} Top Level Menu 12
3 The LISP Keyboard 14
4 The Mouse Documentation Line 16
5 The Top Level Menu 18
6 The Global Pad Help Menu 19
7 The Existing File Selection Menu 20
8 The Index Editor Screen 22
9 The Index Editor Help Menu 24
10 The Existing File Selection Menu 27
11 The Index Editor Screen - Loading the File 28
12 The Index Editor Screen 30
13 The Mouse Menu of Operations in Read-Only Mode 32
14 Indexer Parameters 38
15 Mouse Menu of Operations in Edit Mode 43
16 Indexer Parameters 53
17 Mouse Sensitive Regions 67
18 Scroll and Hyper 69
19 The Index Editor HELP Menu – Keyboard Commands . . . 71
20 Indexer Front End: Menu Editor 72
21 Menu Maintenance Utilities 79



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1 Introduction to the User's Manual

This manual is divided into the following main sections:

1. **Introduction to the User's Manual**
   This section.

2. **Fundamentals**
   This portion of the manual provides the user with preliminary information about using the TMC Indexer^{TM} on a Symbolics 3600^{TM} LISP machine, including:

   - Logging in to the LISP Machine
   - Loading the Distribution Tape into the System
   - Performing a Disk Save
   - Accessing the TMC Indexer^{TM} Interface
   - Booting the LISP Machine
   - The LISP Keyboard
   - Using the Mouse
   - Exiting the TMC Indexer^{TM}
   - Logging out of the LISP Machine

   Experienced LISP users can skip this section. Individuals unfamiliar with the LISP machine, however, should read through it before attempting to use the TMC Indexer^{TM}.

3. **Tutorial on the TMC Indexer^{TM}**
   This section provides the user with a description of the TMC Indexer's^{TM} menu system and step-by-step instructions on how to accomplish two basic sample tasks with it. These tasks are:

   (a) **Reading an Existing Index**
   This option allows the user to make use of an existing index: to scan text or to look for specific text items. It is the normal mode

for those who want to make use of the indexes generated by the system. The distribution tape contains a body of text that has already been indexed, so that a new user can gain familiarity with the Indexer's Reading mode.

(b) **Indexing New Text**
This item enables the user to create an index from new text. Again, a sample text file has been provided with the distribution tape for tutorial purposes.

NOTE: This section of the manual does not provide a detailed description of all TMC Indexer^{TM} features; rather, it enables individuals who have no prior experience using the system to perform the main operations. Consult Section 6 for a full description of all TMC Indexer^{TM} features.

4. **Editing an Index – An Advanced Operation**
This section of the manual describes the options available in the "Edit Existing Index" mode.

5. **Troubleshooting**
This section of the manual covers problems that could arise when using the TMC Indexer^{TM} and what to do should they occur.

6. **TMC Indexer^{TM} Features Description**
This section is an extension of the tutorial and provides the user with a detailed description of all TMC Indexer^{TM} features, including:

- Indexing Parameters
- Multiple File Indexing
- The Mouse Menu of Operations in Read-Only Mode
- Mouse Sensitive Regions
- Altering Menus
- Menu Maintenance Utilities

2 Fundamentals

2.1 Logging In On a Lisp Machine

In order to use the Indexer, you must first be logged in on a LISP machine. If the machine is already set up, skip this section, and go to 2.4.

To login on a LISP machine:

1. Make sure that you have a login file set up for you. If you're not sure, check with the person who maintains your computer system.
2. Type: **(login '<your-login-name>)**

   NOTE: Throughout this manual, user-specific information will appear enclosed by angle brackets. For example, <your-login-name> above indicates that the user should type in his/her login name (not the words 'your-login-name'!).
3. A 'T' will now appear on the screen, and your login name will be displayed in the status line.

2.2 Loading the Distribution Tape

Before using the TMC Indexer^{TM}, you must first load the distribution tape that contains the program into your computer system. (Note that this operation only needs to be performed once; if the TMC Indexer^{TM} is already loaded, skip to 2.4.)

Note: Before attempting to load the tape, you should find out the host name for the machine where the Indexer will be stored:

1. If you only have one machine, type:

SI: local-host

The following should appear on the screen:

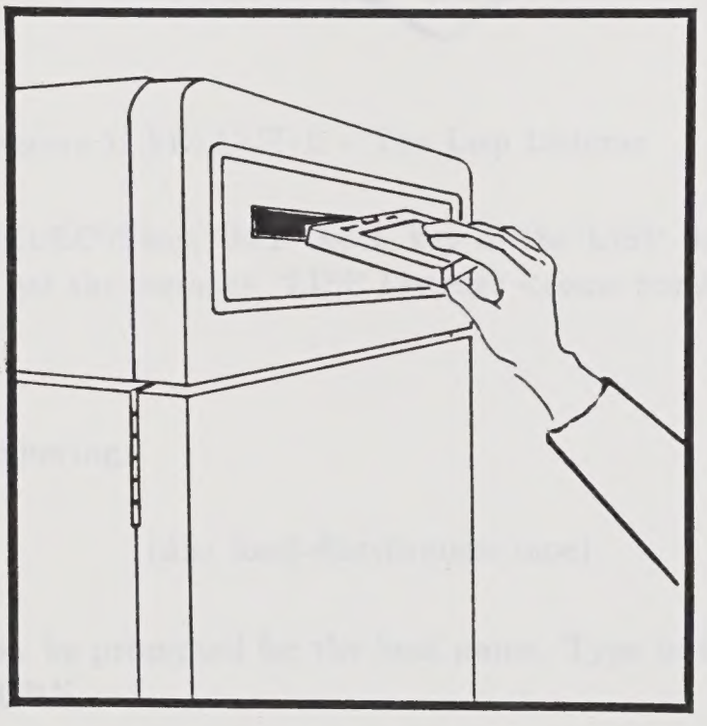
< Lispm-host <**HOSTNAME**> number >

The host name that follows "Lispm-host" is the name of the host you should use in this section.

2. If you have more than one machine, use the name of the machine where system files are kept. If you do not know this information, consult your system administrator.

To load the tape, do the following:

1. Put the tape (with the label face up) into the cartridge tape drive.



2. If you are not already typing into the LISP Listener (the message "LISP Listener" should be near the lower left corner of the screen),

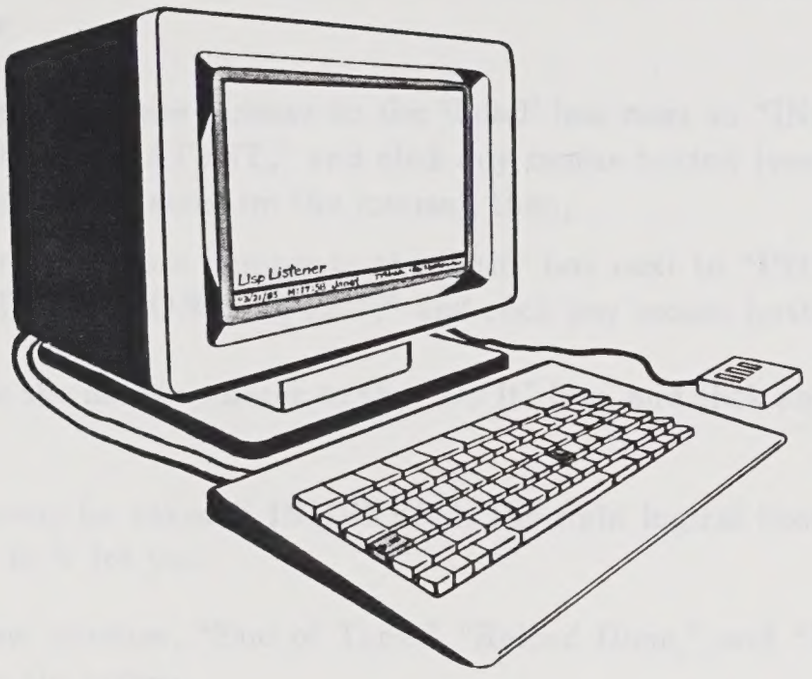


Figure 1: SELECT-L – The Lisp Listener

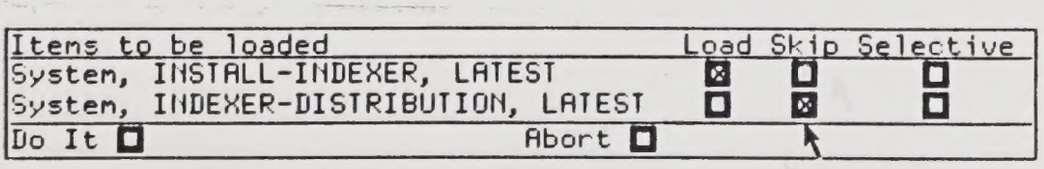
press the SELECT key, then the L key of the LISP machine. You should now get the message "LISP Listener <some number>" on the screen.

3. Type the following:

(dis: load-distribution-tape)

4. You will now be prompted for the host name. Type in the name and press RETURN.

5. The following small window will appear on the screen:



6. At this time, load only "System, INSTALL-INDEXER, LATEST." To do this:
   (a) Move the mouse pointer to the 'Load' box next to "INSTALL-INDEXER, LATEST," and click any mouse button (see Section 2.7 for information on the mouse); then,
   (b) Move the mouse pointer to the 'Skip' box next to "INDEXER-DISTRIBUTION, LATEST," and click any mouse button

7. Now move the mouse pointer to the "Do It" box, and click any mouse button.

8. You will next be asked if INDEXER is the right logical host at this site; type in Y for yes.

9. After a few minutes, "End of Tape," "Reload Done," and "Nil" will appear on the screen.

10. Now type:

    (load "sys: site; install-indexer.lisp")

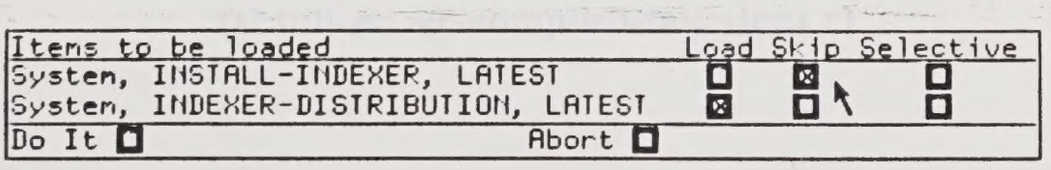
11. You will now be prompted for the host name. Type in the name and press RETURN. "Nil" will now appear on the screen.

12. Now type (again):

    (dis: load-distribution-tape)

13. You will now be prompted for the host name. Type in the name and press RETURN.

14. The following small window will appear on the screen:



15. At this time, load "System, INDEXER-DISTRIBUTION, LATEST":

    (a) Move the mouse pointer to the 'Load' box next to "INDEXER-DISTRIBUTION, LATEST," and click any mouse button; then,

    (b) Move the mouse pointer to the 'Skip' box next to "INSTALL-INDEXER, LATEST," and click any mouse button

16. Now move the mouse pointer to the "Do It" box, and click any mouse button.

17. You will next be asked if INDEXER is the right logical host at this site; type in Y for yes.

18. The system will now create directories and load them.

    NOTE: If the screen becomes filled with information, you will see "*more*" near the bottom of the screen. Press the space bar to get rid of this message (the screen will also be refreshed, and new questions/messages will begin to appear at the top of the screen).

19. "End of tape," "Reload done," and "NIL" will now appear on the screen.

20. Now that the tape has been loaded, remove it from the cartridge tape drive.

2.3 Performing a Disk Save

Once the distribution tape has been loaded, it is recommended that the system administrator also do the following:

1. In a LISP Listener, type:

```
(si:full-gc :gc-compiled-functions t)
```

2. Then type:

(disk-save ">indexer.load")

3. Make a boot file with the Indexer. NOTE: When future releases of the Indexer are received, new boot files will have to be created.

Now the Indexer system will not have to be remade every time the machine is booted.

2.4 Accessing the TMC Indexer^{TM} Interface

Once the TMC Indexer^{TM} is loaded, do the following:

1. Type in:

(make-system 'indexer :noconfirm)

2. It will take about fifteen minutes to make the system. When the system has been made, a 'T' will appear on the screen.

3. Now type:

(indexer)

4. You will now see the screen that is shown in Figure 2.

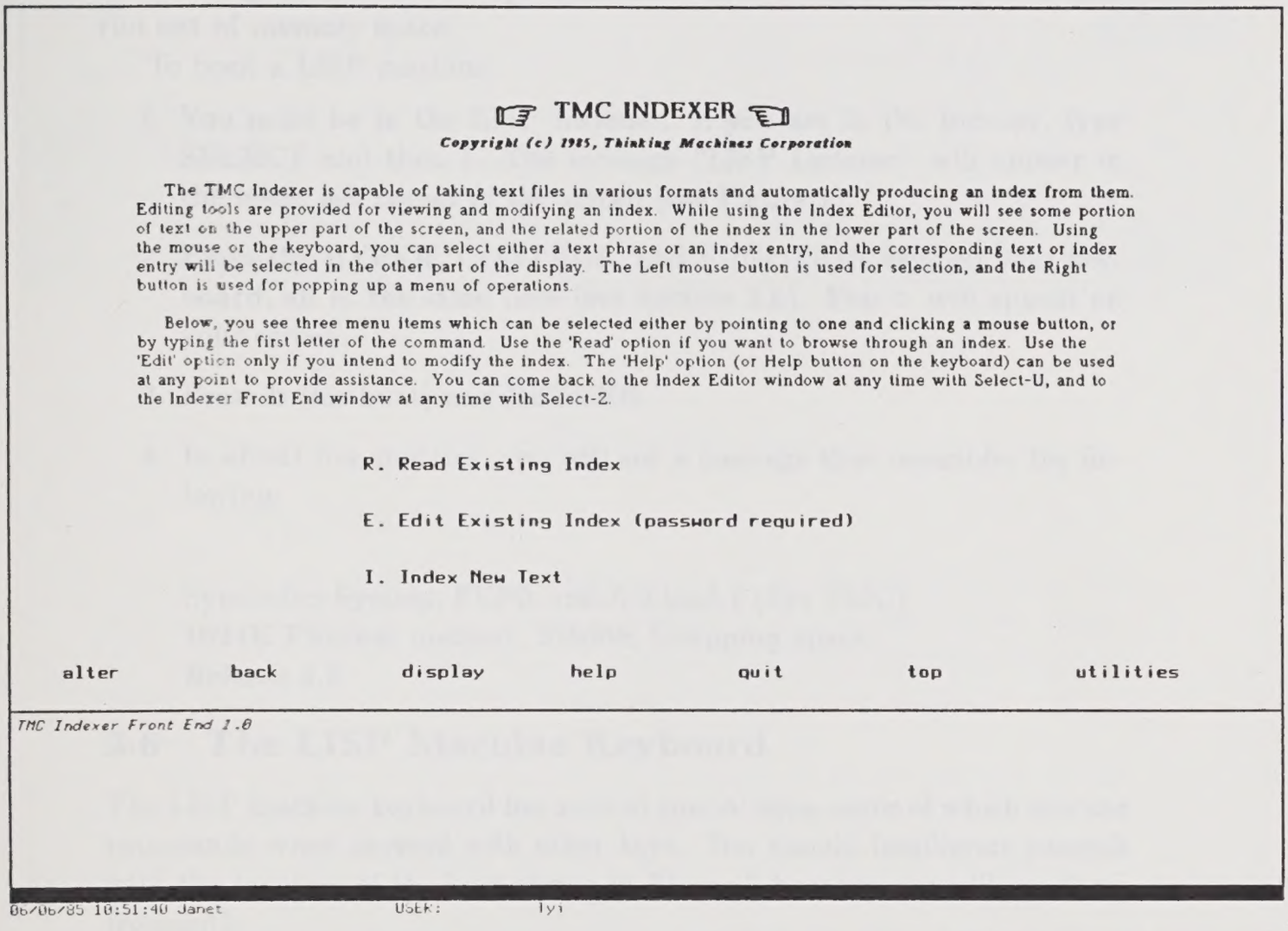


Figure 2: TMC Indexer^{TM} Top Level Menu

2.5 Booting the LISP Machine

There is a finite amount of memory space in a LISP machine. When the available memory space is running low, the machine should be 'booted'.

It is a good idea to boot your machine once a day so that you do not run out of memory space.

To boot a LISP machine:

1. You must be in the LISP Listener. If you are in the Indexer, type SELECT and then L. The message "LISP Listener" will appear in the lower left corner of the screen (see Figure 1).

2. Press the HYPER, CONTROL, and FUNCTION keys on your keyboard, all at the same time (see Section 2.6). **Fep >** will appear on your screen.

3. Press **b** (for boot) and RETURN.

4. In about five minutes, you will see a message that resembles the following:

```
Symbolics System, FEP0:>rel-5-2.load.1 (Sys TMC)
1024K Physical memory, 37500K Swapping space.
Release 5.2
```

2.6 The LISP Machine Keyboard

The LISP machine keyboard has several special keys, some of which execute commands when pressed with other keys. You should familiarize yourself with the location of the keys shown in Figure 3 because you will use them frequently.

Some keys (control, meta, hyper, and super) are like shift keys on an ordinary typewriter; to type CONTROL-L, hold down the CONTROL key while typing L. The other special keys (select, rubout, refresh, help, and abort) are not like shift keys; to type SELECT-L, press SELECT, release it, then press L. Note that the keys that are like shift keys are light grey in color and labelled with dark grey lettering; the keys that are not like shift keys are also light grey in color, but are labelled with white lettering.

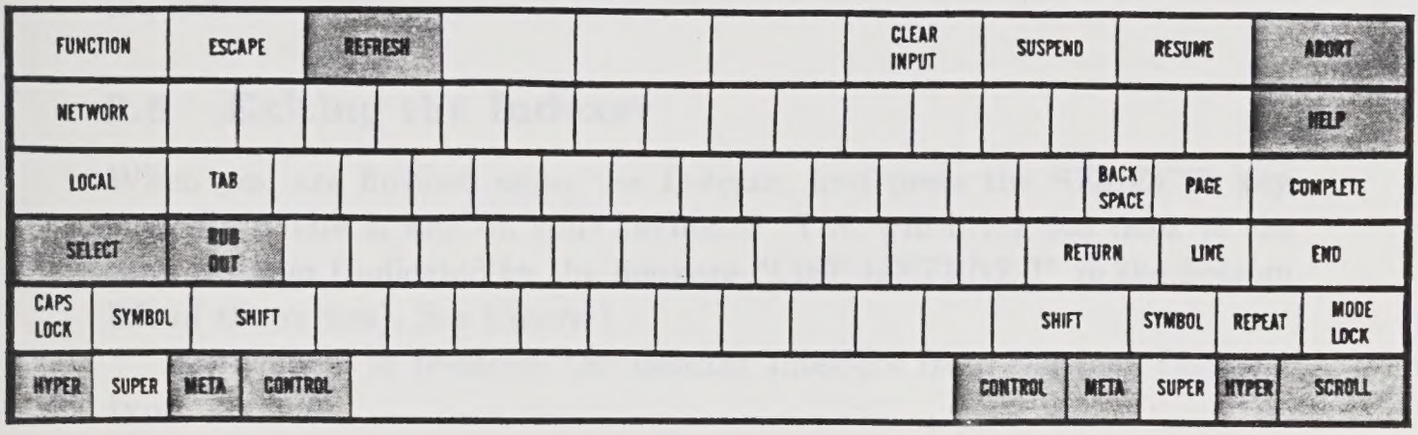


Figure 3: The LISP Keyboard

2.7 Using the Mouse

The mouse is a device that provides you with an alternative to using the keyboard. A pointer on the screen corresponds to movement of the mouse, so instead of pressing keys on the keyboard to move around the screen or select items, simply move the mouse around and press or click one of the mouse buttons.

Most Indexer task options can be selected by either typing the first letter or number of the selection or pointing to the item with the mouse and clicking the left mouse button. Moving the mouse pointer near an item causes the "capture" of the pointer, which is indicated by a box drawn around the item. When you click the left mouse button on a boxed item, you select that item.

In general, clicking the left mouse button selects an item, while clicking the right button pops up a menu of operations. If you are unsure about what clicking a particular mouse button will do in different situations, look at the dark bar (called the mouse documentation line) near the bottom of the screen (see Figure 4). This line displays the actions that

will result from pressing each of the mouse buttons.

See Section 6.5, Mouse Sensitive Regions, for more information on using the mouse.

2.8 Exiting the Indexer

When you are finished using the Indexer, first press the **SELECT key and then the L key** on your keyboard. This will bring you back to the Lisp Listener (indicated by the message "LISP LISTENER" in the bottom left of the screen). See Figure 1.

Remember, to re-access the Indexer Interface from the Lisp Listener, type:

(indexer)

2.9 Logging Out of the LISP machine

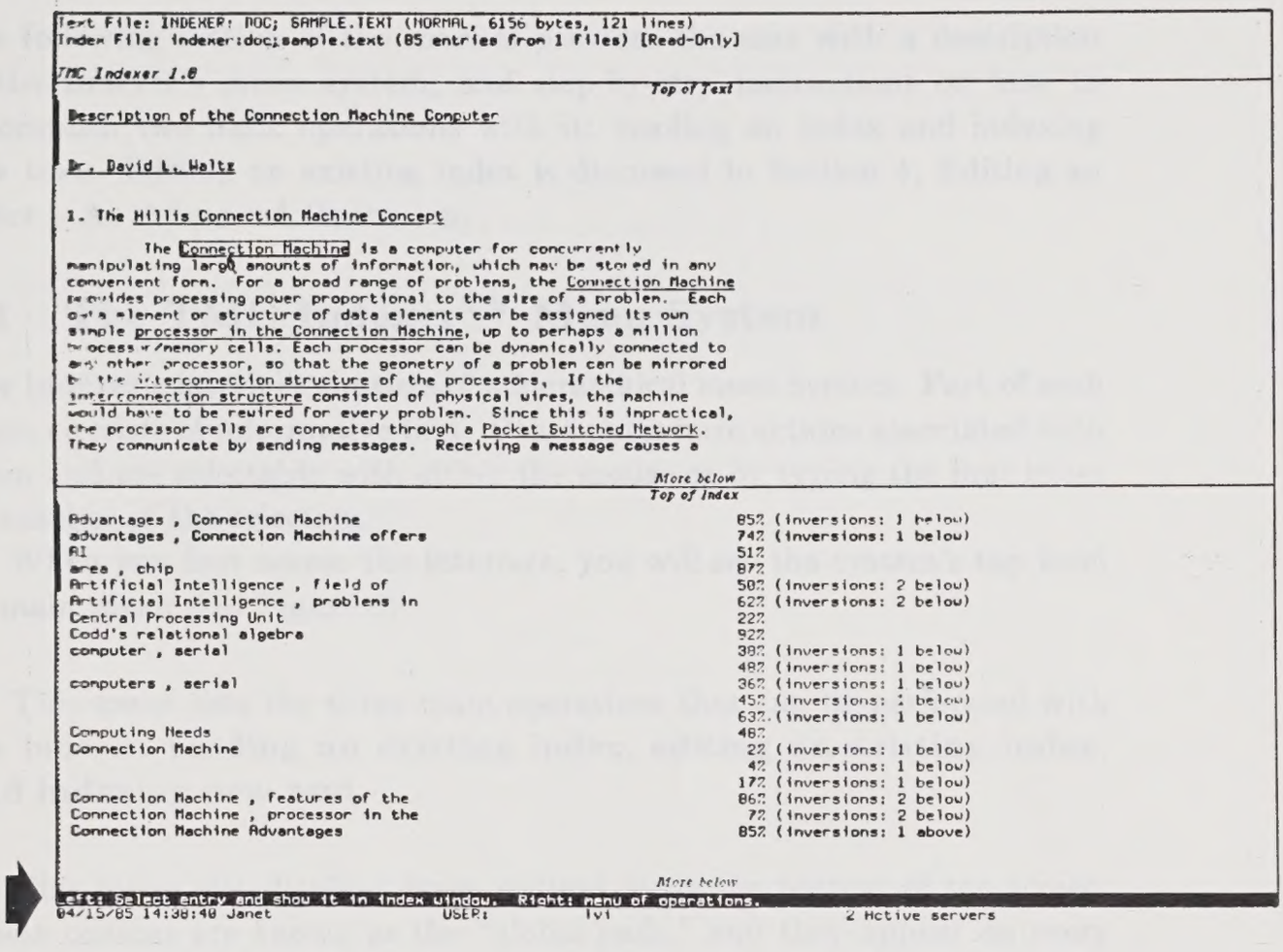
To logout of the LISP machine:

1. You must first exit the Indexer (see Section 2.8 above).
2. Type:

(logout)

3. A 'T' will now appear on the screen.

You do not need to logout of the machine if you are the only user, or if you will be the next person to use the machine at a later time. Sites may differ in their policies; consult your local system administrator for advice on whether or not to logout.



Mouse
Documentation
Line

Figure 4: The Mouse Documentation Line

3 Tutorial on the TMC Indexer^{TM}

The following section of the manual provides the user with a description of the Indexer's menu system, and step-by-step instructions on how to accomplish two basic operations with it: reading an index and indexing new text. Editing an existing index is discussed in Section 4, Editing an Index - An Advanced Operation.

3.1 The TMC Indexer^{TM} Menu System

The Indexer's interface consists of a hierarchical menu system. Part of each menu consists of informative text. Other parts have actions associated with them and are selectable with either the mouse or by typing the first letter or number of the selection.

When you first access the interface, you will see the system's top level or main menu (see Figure 5).

This menu lists the three main operations that can be performed with the Indexer: **reading an existing index, editing an existing index, and indexing new text.**

This menu also displays seven options along the bottom of the screen. These options are known as the "global pads," and they appear on every menu in the Indexer.

If you select the **help** global pad, the Help menu will pop up (see Figure 6).

Note that to get back to the top menu, type T for Top Menu or B to go back to the last menu (or select the **Top** or **Back** global pad).

If you select either the **Read** or **Edit** Existing Index selection, the Indexer's **Existing File Selection** menu will pop up (see Figure 7).

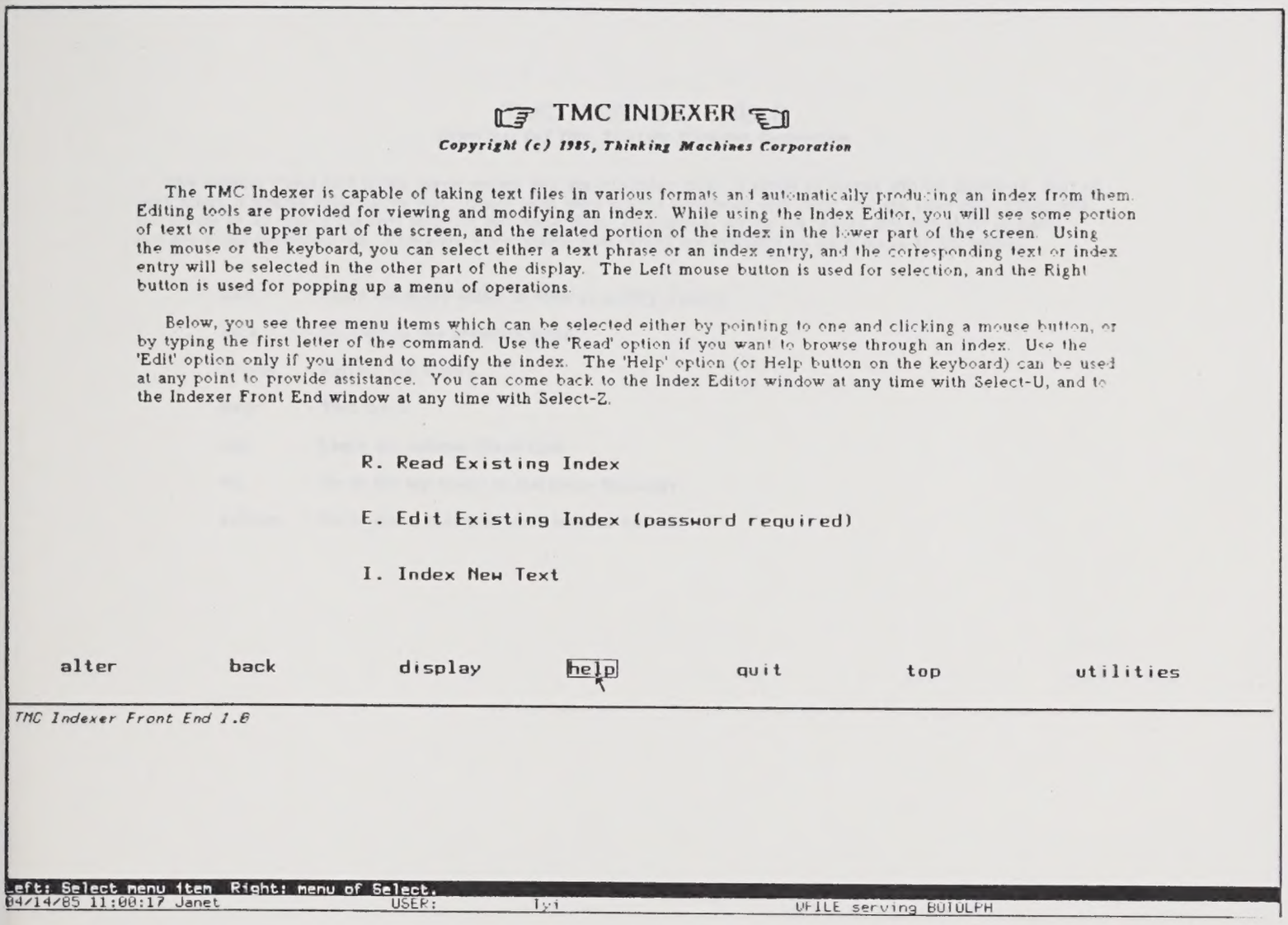


Figure 5: The Top Level Menu

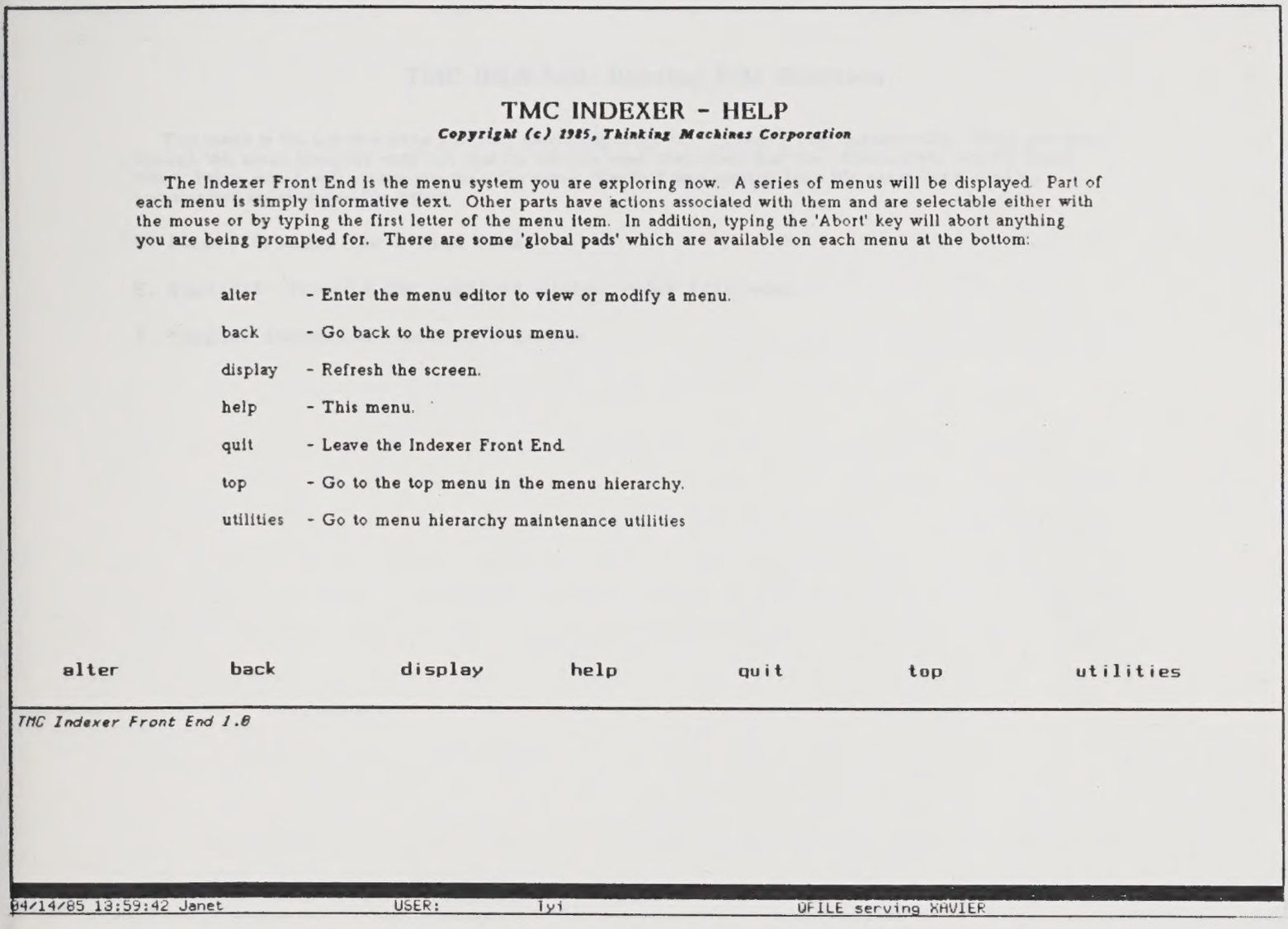


Figure 6: The Global Pad Help Menu

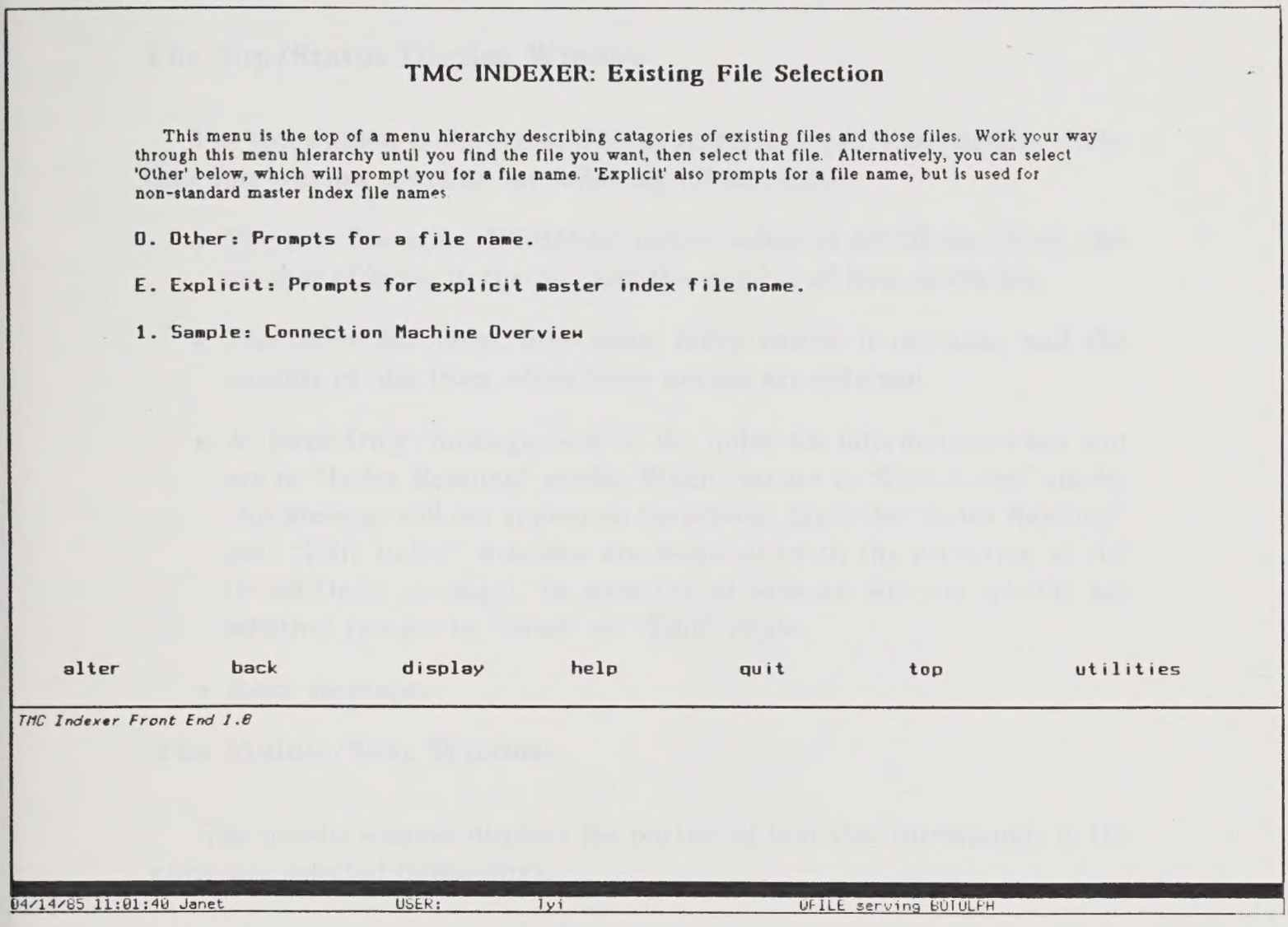


Figure 7: The Existing File Selection Menu

If you select an existing file, the Index Editor screen will appear (see Figure 8). Notice that this screen is divided into the following three main sections or windows:

The Top/Status Display Window

The top window is the status display and user interaction window. Note that this window contains the following information:

- The text file name, NORMAL (which refers to ASCII text files), the number of bytes in the file, and the number of lines in the file.
- The index file name, how many index entries it contains, and the number of files from which these entries are obtained.
- A [Read-Only] message next to the index file information when you are in "Index Reading" mode. When you are in "Edit Index" mode, this message will not appear on the screen. Since the "Index Reading" and "Edit Index" windows are identical (with the exception of the [Read-Only] message), its presence or absence lets you quickly see whether you are in "Read" or "Edit" mode.
- Error messages.

The Middle/Text Window

The middle window displays the portion of text that corresponds to the currently selected index entry.

- Indexed terms are underlined in the text.
- When you select an underlined term in the text portion of the screen, the item is highlighted in both the text portion of the screen (the middle window) and the index portion of the screen (the lower window).

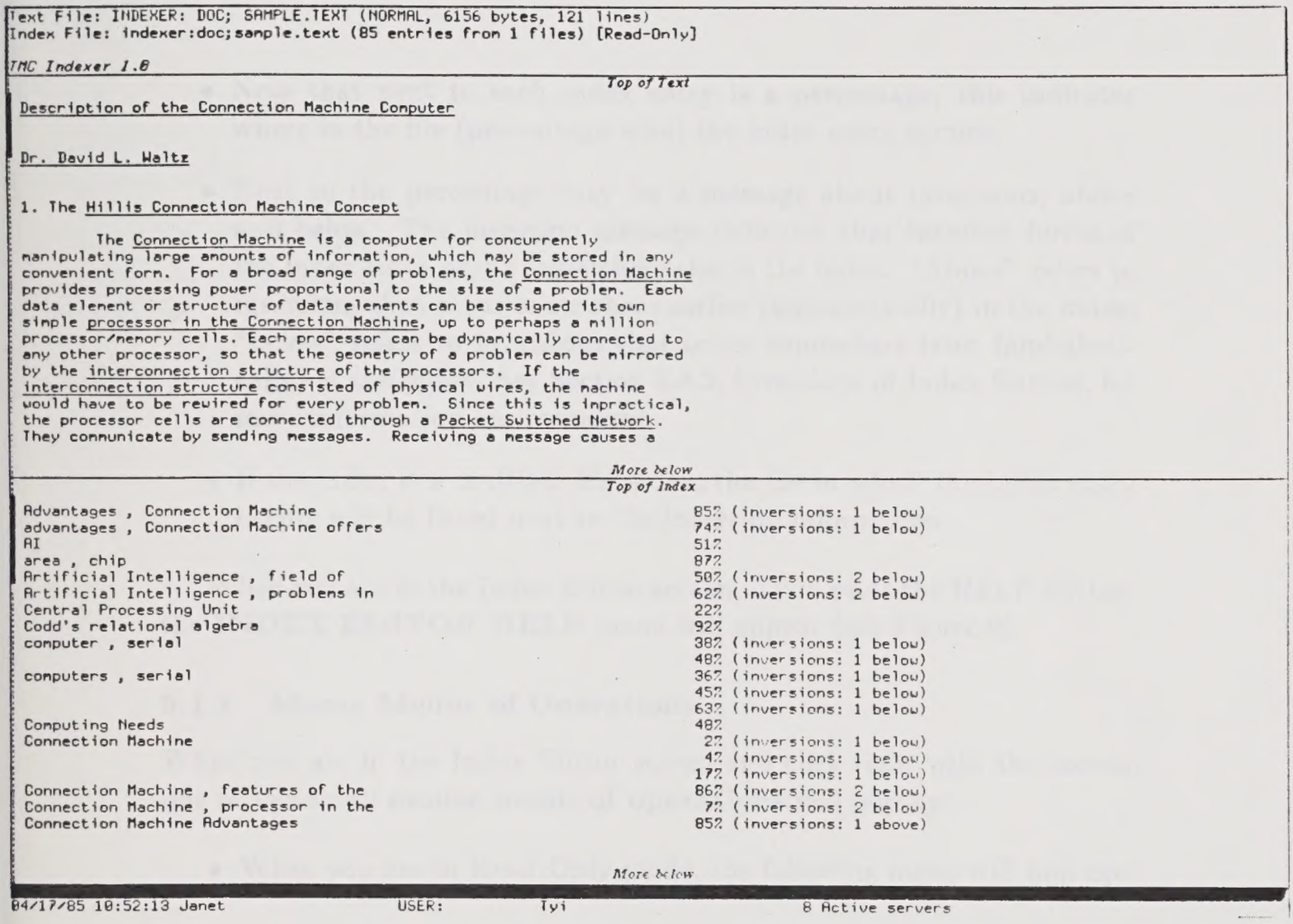


Figure 8: The Index Editor Screen

The Bottom/Index Window

The bottom window displays a portion of an index.

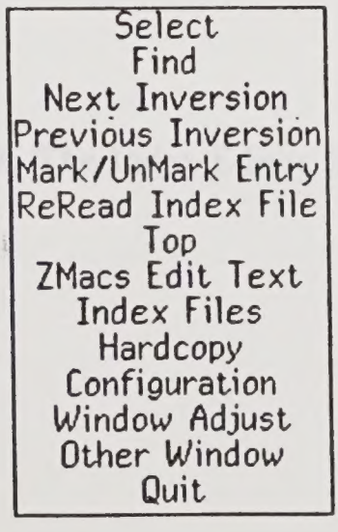
- Note that next to each index entry is a percentage; this indicates where in the file (percentage-wise) the index entry occurs.
- Next to the percentage may be a message about inversions, above and below. The inversion message indicates that inverted forms of the index entry occur somewhere else in the index. "Above" refers to inversions that occur somewhere earlier (alphabetically) in the index; "below" refers to inversions that occur somewhere later (alphabetically) in the index. See Section 3.3.3, Inversions of Index Entries, for more information on inversions.
- If the index is a multiple file index, the file in which the index entry occurs will be listed next to the inversion information.

When you are in the Index Editor screen, if you press the HELP button, the **INDEX EDITOR HELP** menu will appear (see Figure 9).

3.1.1 Mouse Menus of Operations

When you are in the Index Editor screen and click right with the mouse, one of two small **mouse menu of operations** will pop up.

- When you are in Read-Only mode, the following menu will pop up:



TMC INDEXER: Index Editor

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The Index Editor has three windows. The top window is a status display and user interaction window. The middle window is for the display of portions of text that have been indexed. The lower window is for portions of an index. Selection is made by pointing to an index entry or a text item (the underlined sections) and clicking the left mouse button. When you select something, the corresponding item will also be selected in the other window.

Read-Only mode is used for browsing, and while in that mode some of the commands below are disabled (as noted). The index window lists index entries with the following information: (1) if the index is to more than one text file, the text file name is listed; (2) the percentage into the text file of the entry; (3) the number of inversions of this entry.

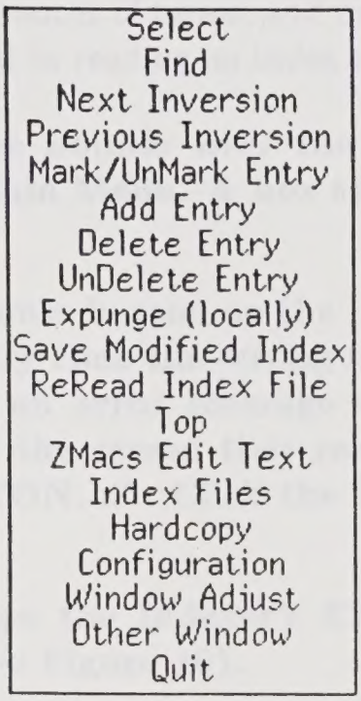
Commands are selected either by menu or by keystroke. A menu pops up when the right mouse button is clicked. The first letters of menu commands are unique, and they are the characters you type for keyboard commands (plus several others). Here is the complete set of keyboard commands:

```
  meta-<        - Move to beginning of text or index (depending on which window the mouse is in)
  meta->        - Move to end of text or index
  scroll        - Move down one index entry or text line
  hyper-scroll  - Move up one index entry or text line
  control-V     - Move down one page
  meta-V        - Move up one page
  control-N     - Select next index entry or text item (first if none is selected)
  control-P     - Select previous index entry or text item (last if none is selected)
  control-L     - Redisplay
  Refresh       - Redisplay
  Help, ?       - This message

  A, a          - Add Index entry (not available in Read-Only)
  C, c          - Configuration: modify Indexer parameters
  D, d          - Delete selected Index entry (not available in Read-Only)
  E, e          - Expunge deleted Index entries (not available in Read-Only)
  F, f          - Find
  H, h          - Hardcopy
  I, i          - Index new files
  M, m          - Mark selected Index entry (or unmark it if it is marked)
  N, n          - Next Index inversion: if there is an inversion of the selected entry below it, select that inversion
  O, o          - Other window (switch between text and index windows)
  P, p          - Previous Index inversion: if there is an inversion of the selected entry above it, select that inversion
  Q, q          - Quit (leave the Index Editor; Select-U will get you back)
  R, r          - ReRead Index file (throw away changes; reread index and text)
  S, s          - Save modified index (not available in Read-Only)
  T, t          - Top of Indexer Front End
  U, u          - UnDelete Index entry (not available in Read-Only)
  W, w          - Window adjustment (prompts for new setting of border between text and index windows)
  Z, z          - ZMacs: Edit text

                  ====> Type any character to go back to the Index Editor <=====

4/14/85 11:03:30 Janet          USER:          Tvi                    DFILE serving BOTOLPH
```

Figure 9: The Index Editor Help Menu

This menu is discussed in detail in Section 6.4, Mouse Menu of Operations in Read-Only Mode.

- When you are in Edit mode, the following menu will pop up:



This menu is discussed in detail in Section 4.1 of this manual, Editing Options.

3.2 Review

- **Note: As previously mentioned, most TMC Indexer™ task options can be selected by either using the mouse or typing the first letter or number of the option. In this tutorial, however, the mouse alternative will be used as the example since it provides visual feedback.**
- **Remember, to access the Indexer's interface, type:**

(indexer)

- **You will now see the Indexer's top level menu (i.e., Figure 2)**

3.3 How to Read an Index – Tutorial

Reading an index allows you to simultaneously look at the index and the places in the text where the index entries occur. Selecting terms and their inversions, finding occurrences of terms, and marking index entries are the basic operations involved in reading an index and are described below.

1. **Move the mouse pointer over the "Read Existing Index" option in the Main Menu. A box should appear around the words.**

2. **Click the left mouse button on the boxed item to select it. If you inadvertently click the wrong mouse button, the screen will flash, and an error message will appear on the bottom left side of the screen that reads, "Unexpected blip = MOUSE BUTTON...." Click the left mouse button to recover.**

3. **You will now see the Indexer's EXISTING FILE SELECTION menu (see Figure 10).**

4. **Select the index you want to read by:**

   (a) Moving the mouse pointer onto the "Sample: Connection Machine Overview" option in the menu; and

   (b) Clicking the left mouse button on the boxed option to select it.

5. **If the file has not been previously loaded, a blank Index Editor screen will now appear (see Figure 11).**

   If it has been loaded, you will almost immediately see Figure 12.

6. **In a few seconds, you will see "LOAD INDEX FILE" in the upper right corner of the screen.**

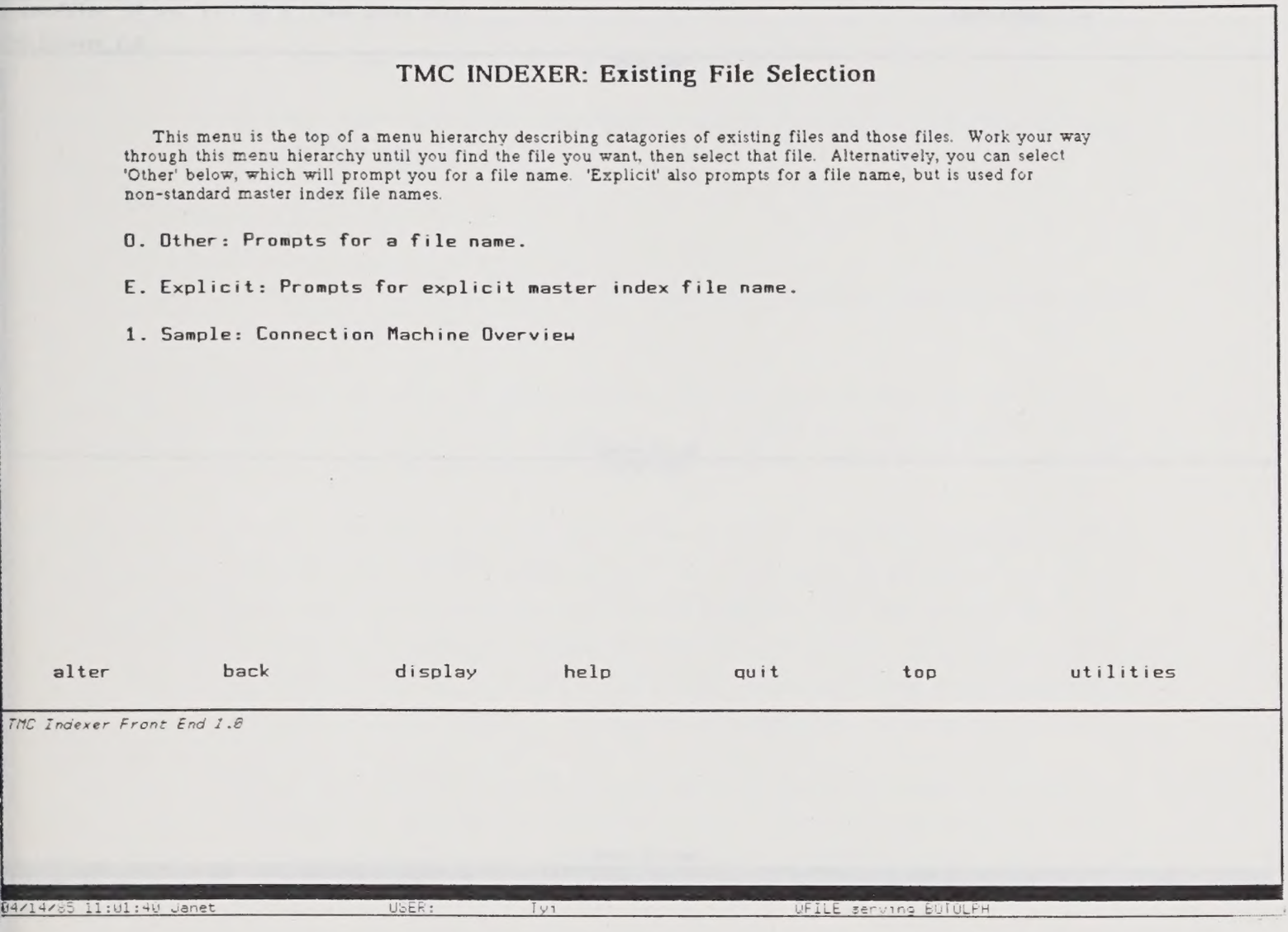


Figure 10: The Existing File Selection Menu

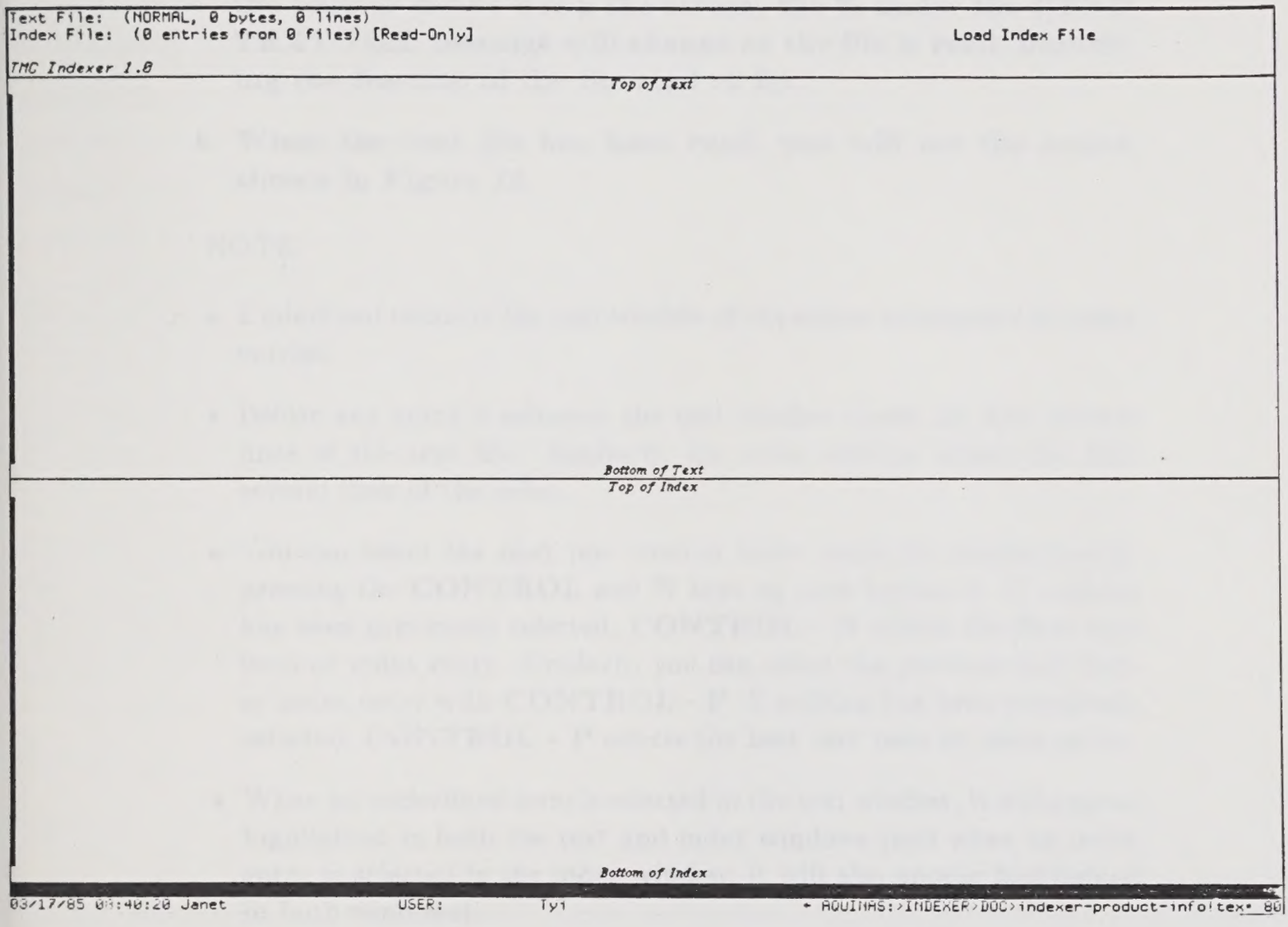


Figure 11: The Index Editor Screen - Loading the File

7. **After another few seconds, this message will change to "READ TEXT FILE" with a % symbol under it. At the same time, a pointer will move down the right side of the screen. As the pointer moves down the screen, the % under the READ TEXT FILE message will change as the file is read, indicating the fraction of the file read so far.**

8. **When the text file has been read, you will see the screen shown in Figure 12.**

NOTE:

- Underlined terms in the text window of the screen correspond to index entries.
- Before any entry is selected, the text window shows the first several lines of the text file. Similarly, the index window shows the first several lines of the index.
- You can select the next text item or index entry by simultaneously pressing the **CONTROL** and **N** keys on your keyboard. If nothing has been previously selected, **CONTROL - N** selects the **first** text item or index entry. Similarly, you can select the previous text item or index entry with **CONTROL - P**. If nothing has been previously selected, **CONTROL - P** selects the **last** text item or index entry.
- When an underlined term is selected in the text window, it will appear highlighted in both the text and index windows (and when an index entry is selected in the index window, it will also appear highlighted in both windows).

3.3.1 How to Select a Term in the Text

1. **Move the mouse pointer onto the underlined term, "Hillis Connection Machine Concept " in the text window. A box will appear around the term.**

2. **Click the left mouse button on the boxed term to select it.**

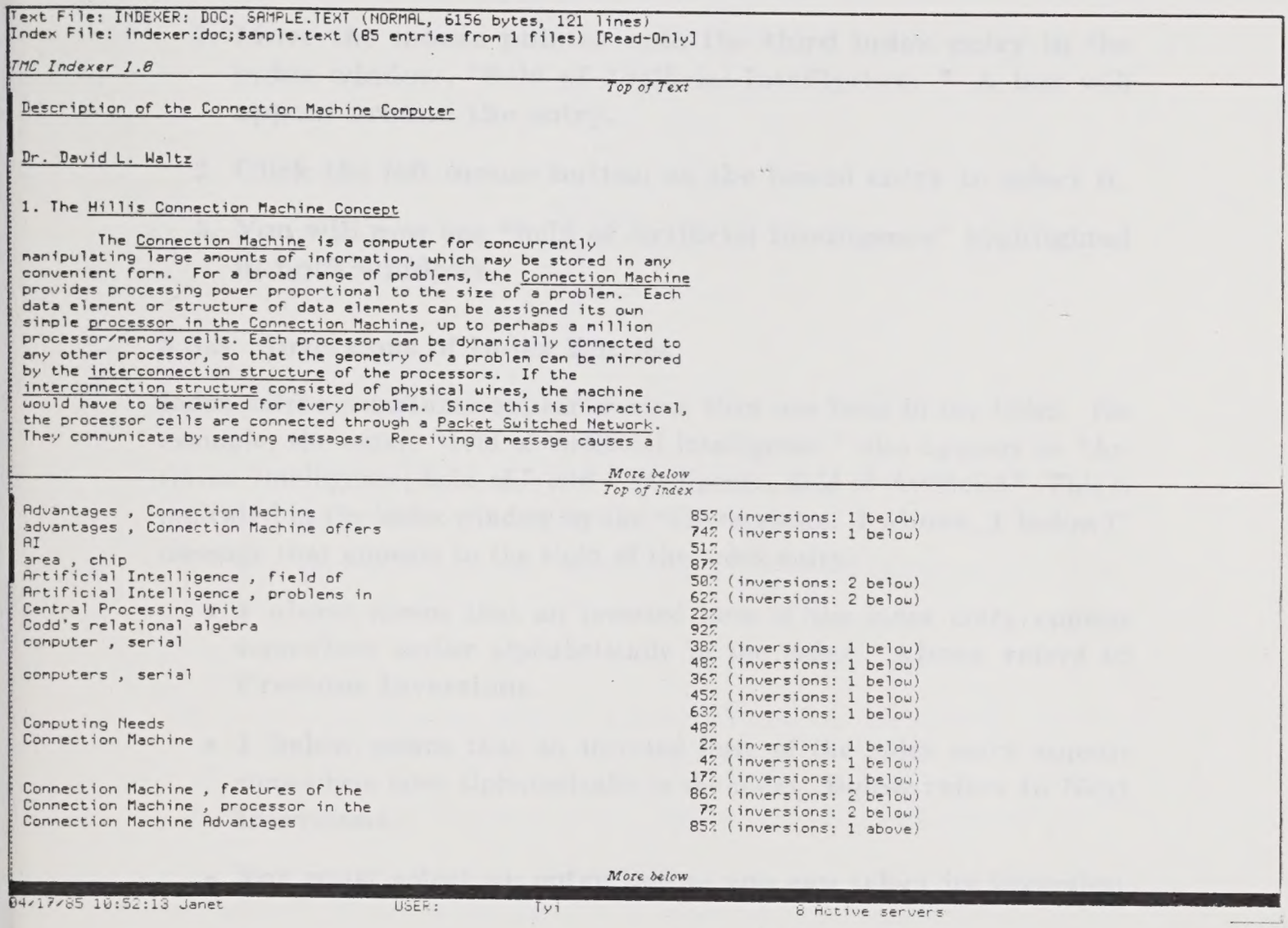


Figure 12: The Index Editor Screen

3. **You will now see "Hillis Connection Machine Concept" highlighted in both windows.**

3.3.2 How to Select an Entry in the Index

1. **Move the mouse pointer onto the third index entry in the index window, "field of Artificial Intelligence. " A box will appear around the entry.**
2. **Click the left mouse button on the boxed entry to select it.**
3. **You will now see "field of Artificial Intelligence" highlighted in both windows.**

3.3.3 Inversions of Index Entries

Index entries sometimes appear in more than one form in the index. For example, the entry, "field of Artificial Intelligence " also appears as "Artificial Intelligence, field of," and "Intelligence, field of Artificial." This is indicated in the index window by the **"(inversions: 1 above, 1 below)"** message that appears to the right of the index entry.

- **1 above** means that an inverted form of the index entry appears somewhere earlier alphabetically in the index. **Above refers to Previous Inversions.**
- **1 below** means that an inverted form of the index entry appears somewhere later alphabetically in the index. **Below refers to Next Inversions.**
- **You must select an entry before you can select its inversion.**

3.3.4 How to Select a Previous Inversion

1. **To select the previous inversion of the entry "features of the Connection Machine":**
   (a) **Move the mouse pointer onto "features of the Connection Machine" in the index window; and then**

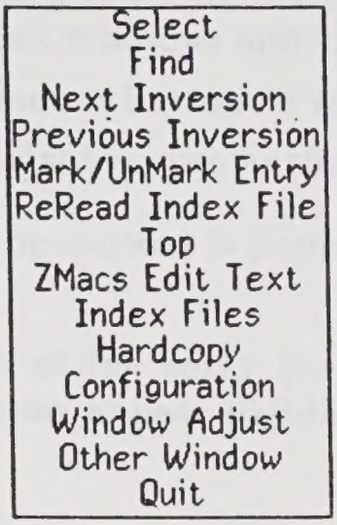


Figure 13: The Mouse Menu of Operations in Read-Only Mode

(b) Click the left mouse button to select the entry.

(c) Now click the right mouse button.

(d) You will now see the menu of operations shown in Figure 13.

2. Move the mouse pointer to the "Previous Inversion" option in the menu, so that it becomes boxed.

3. Click any mouse button on the boxed option to select it.

4. The previous inversion of the entry (i.e., "Connection Machine, features of the") will now appear highlighted in the index window.

3.3.5 How To Select a Next Inversion

1. First select the index entry, "CPU Operations, results of the" in the index window:

(a) **Move the mouse pointer to "CPU Operations, results of the" in the index window; and then**

(b) **Click the left mouse button to select the entry.**

(c) **Now click the right mouse button.**

2. **When the menu of operations is popped up, select the "Next Inversion" option.**

3. **The next inversion of the entry (i.e., "results of the CPU Operations") will now appear highlighted in the index window.**

3.3.6 How to Find Index Entries

The FIND option enables you to quickly find indexed terms in either the text or index.

1. **Click the right mouse button to pop up the menu of operations.**

2. **Move the mouse pointer to the "Find" option.**

3. **Click any mouse button to select the option.**

4. **You will now see the following small menu**

These first three options are the most useful:

- TEXT searches the *text* for a specified string. See Section 3.3.7.

- FIRST searches the *index* for a specified string; to match, the string must be the first portion of an index entry. See Section 3.3.8.

- ANY searches the *index* for a specified string; this option will find strings that appear anywhere in an index entry. See Section 6.4.

In general, FIRST will operate much more rapidly than ANY, since FIRST only has to search the beginnings of index entries, while ANY must search through all portions of the index entries.

- INCREMENTAL searches the *index* incrementally for a specified string. See Section 6.4 for a description of this option.

- MARK finds the next *marked index entry.* It is discussed below, and in Section 6.4.

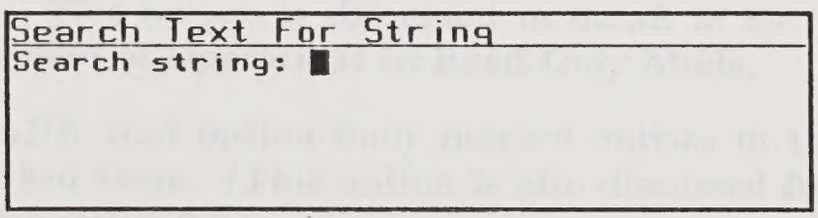
3.3.7 How To Find a String in the Text

Note: This option searches forward in the text for the string; so if you are past the point in the text where the term occurs, the screen will flash, and an error message will appear in the top window that reads, "string <whatever you typed in> not found in text." If this should occur, go to the beginning of the text by pressing META - <, and repeat the TEXT find operation.

1. **Click right with the mouse and select the FIND option by clicking any mouse button on it.**

2. **Select the TEXT option with the mouse by clicking any mouse button on it.**

3. **The following window will pop up on the screen:**



4. Type in the word, "chip" and press RETURN.

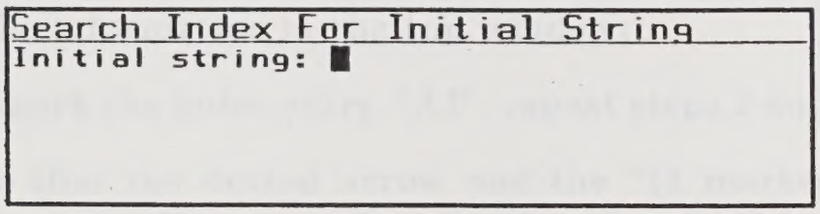
5. You will now see the term, "chip area" in the text window, with a blinking box on the letter "c."

3.3.8 How To Find a String in the Index

1. Click right with the mouse and select the FIND option by clicking any mouse button on it.

2. When the small menu pops up, select the FIRST option by clicking any mouse button on it.

3. The following window will pop up on the screen:



4. Type in the word "Codd", and press RETURN.

5. You will now see the term "Codd's relational algebra" highlighted in both the text and index windows.

- The INCREMENTAL find option lets you view the search process. This option is discussed in detail in Section 6.4, Mouse Menu of Operations in Read-Only Mode.

- The MARK find option finds marked entries in the order you marked them. (This option is also discussed further in detail in Section 6.4.)

3.3.9 How to Mark and Unmark an Index Entry

The MARK/UNMARK ENTRY option allows you to mark index entries you want to be able to return to.

1. **First, select the index entry "AI" with the mouse.**
2. **Click right with the mouse to pop up the menu of operations.**
3. **Click any mouse button on the MARK/UNMARK ENTRY option.**
4. **The index entry "AI" will now have a dotted arrow to the right of it in the index window, indicating that it is a marked item.**
5. **The message "(1 marked entry)" will also appear in the Index File information in the top window.**
6. **To unmark the index entry "AI", repeat steps 2 and 3 above.**
7. **Notice that the dotted arrow and the "(1 marked entry)" message have disappeared, indicating that "AI" is no longer a marked entry.**

3.4 How to Index New Text – Tutorial

The TMC Indexer^{TM} contains a fully automatic index generator. When you give it machine readable natural language text, it will quickly produce a high quality index that may be merged with other indexes into a cumulative or "master" index.

This section takes you through the process of indexing a text file.

1. **Select the Index generation mode:**

   (a) **Go to the Top Level Menu. To get to the Top Level Menu if you are already in the Indexer, click the right mouse button to get a small menu, select "Top", and click any button. Otherwise, to get to the Top Level Menu, follow the instructions in Section 2.**

   (b) **Move the mouse pointer on the "Index New Text" option in the Top Level Menu.**

   (c) **Click the left mouse button on the boxed item to select it.**

2. **Set up indexing parameters:**

   (a) **You will now see the menu shown in Figure 14 popped up on the Index Editor screen.**

   (b) **For now, press RETURN in response to all the parameter questions. This leaves all the parameters at their standard settings.**
   For a detailed explanation of these parameters, see Sections 6.1 - 6.3 of this manual.

3. **Select files to index:**

   After completing step 2(b), the system asks you to type in the name of the file you want to index.

```
Indexer Parameters - Return for default, Abort to abort, Help for help.
Force re-indexing for files already indexed (Yes or No) <Yes>: ■

Print index to ZMacs buffer after indexing (Yes or No) <No>:

Index only keywords (Yes or No) <No>:

Minimum for non-orthographically marked entry selection <2.>:

File name for user list of phrases to save <None>:

File name for user list of words to omit <None>:

File name for user list of words to invert on <None>:

Generate only pre-index (will not be displayable) (Yes or No) <No>:
```

Figure 14: Indexer Parameters

(a) Type in the complete, literal name of the file, and press RETURN. If you have trouble with this step, consult your local system expert for the file naming conventions in use at your site.

(b) You will now be asked for the name of the next file you want to index.

4. Starting the indexing process:

(a) For now, press RETURN to terminate the list. This starts the indexing process. In general, typing RETURN without first typing a file name will begin the indexing process.
For a detailed explanation of multiple file indexing, see Section 6.3 of this manual.

(b) For the next few minutes, the TMC Indexer^{TM} will read the source file and create an index from it. The TMC Indexer^{TM} indexes about 100 pages an hour. You can

verify that the system is still executing by noting a bar periodically flashing beneath the process state at the very bottom center of your screen. In addition, various messages will flash in the top right corner of the screen (for example, Saving, Rejecting, Organizing Index, etc.)

5. Adding the newly indexed text to the menu hierarchy:

   (a) When the index has been created, it will appear on the screen, with the following message displayed:

```
Index
Do you want to put this index in the File Selection Menu hierarchy?
A 'Yes' answer will put you in the menu hierarchy.  Move to the place
you want to insert the index (possibly creating new menus on the way)
and use the 'Alter' 'Insert Item' command.   (Y, N, or Abort-key):
```

   (b) Type "y." This response will bring you to the Existing File Selection menu.

6. Altering the file selection menu:

   You now need to alter the file selection menu to include the newly indexed file.

   (a) Find the menu in which you want the new index to appear.

(b) Select the "alter" option near the bottom of the screen. "Alter" allows you to add to or change the file selection menu.

(c) You will now be asked for a password. Type in the password, and press RETURN. Consult your system maintainer if you don't know the password.

(d) Press META-I (to insert a new menu item). Remember, the META key is like a shift key. To type META-I, press META and then I, while still holding META down.

(e) A blinking cursor will now appear under the last existing file selection. Type in the number and name you want to give your new index. It need not be the same as the file – you can type any convenient or appropriate name.

(f) Press RETURN, and everything you typed in will appear highlighted.

7. Connecting an action to the new name:

(a) A small window will appear on the screen that asks you if you want to set an action for the last index viewed. Type "yes," and press RETURN.

(b) Press CONTROL-C to exit Alter mode. The CONTROL key is also like the SHIFT key. To type CONTROL-C, press CONTROL, and press C while still holding CONTROL down.

8. Cleaning up; making changes permanent:

IMPORTANT NOTE: Until you save the modified menus, all changes are viewed as temporary by the system!

(a) A small window will appear on the screen that asks you if you want to save the changes you have just made. Type "y."

(b) Now select the Utilities option on the bottom of the screen. This will bring you to the Menu Maintenance Utilities screen.

(c) Select the "Save Modified Menus" option.

(d) You will now be asked for a password. Type in the password, and press RETURN. Consult your system maintainer if you don't know the password.

(e) Type T or select the "Top" global pad to get back to the Top Level Menu.

Your new index now exists as a selection in the Existing File Selection menu and can be read or edited.

4 Editing an Index – An Advanced Operation

The "Edit Existing Index" selection allows you to add, modify, and delete index entries, as well as edit the source text.

The Index Editor screen that appears when the "Edit" option is selected is very similar to the Index Editor screen that appears when the "Read" option is selected; the main difference is that a different menu pops up if the right mouse button is clicked.

To edit an existing index:

1. **Select the "Edit Existing Index" option from the top level menu.**

2. **A small window will appear that prompts you for a password.**

3. **Type in the password, and press RETURN. Consult your system maintainer if you don't know the password.**

4. **You will now see the Existing File Selection menu.**

5. **In order to edit an existing index, you must first select it from this menu. Select one of the files (or use the Other or Explicit options).**

   NOTE: When using the Other option, you are prompted for a file name – the literal file name. The file names that appear in the existing file selection menu are descriptive, rather than literal names. An example of a literal file name is: a:>p>indexer>text>text.lisp.

   See Section 6.3 for a discussion of the Explicit option.

6. **You will now see the Index Editor screen. Note that this screen is the same Index Editor screen that appears when**

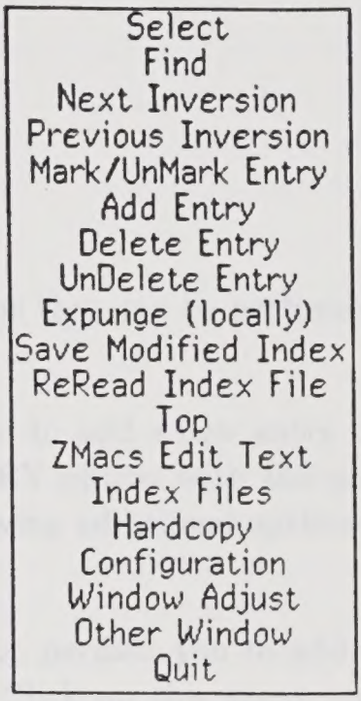


Figure 15: Mouse Menu of Operations in Edit Mode

you read an index, except that the [Read-Only] message is not displayed in the top window.

4.1 Editing Options

Once you are in the Index Editor screen, you can edit the existing index. To do this, click right with the mouse to pop up a menu of operations (see Figure 15).

Notice that this menu closely resembles the menu you popped up when reading an index. This menu, however, offers you the following additional options:

- Add entry
- Delete entry
- Undelete entry

- Expunge (locally)
- Save modified index
- Reread index file
- ZMACS edit text

The additional operations that can be performed in Edit mode are:

1. **Add Entry**
   This option allows you to add a new entry to the index. When you select the ADD ENTRY option with the mouse, a small menu will pop up with the following additional options:

   (a) **TEXT**
   The TEXT option permits you to add an index entry from the displayed text. Click on this menu entry, and a message will appear in the top window that reads, "Move mouse to first word, then click a mouse button (any other key to abort)." Remember, you must be in the TEXT WINDOW to perform this operation. When you move the mouse, you will notice that a small dark box appears above the mouse cursor. As the message indicates, move the mouse to the first character of the first word of the entry you would like to add, and click any mouse button. Another message will now appear in the top window that reads, "Move mouse to last word, then click a mouse button (any other key to abort)." When you move the mouse, the word(s) over which you have moved will appear highlighted. Click a mouse button when you have reached the end of the term you want to add as an index entry. The term will now appear as a highlighted index entry in the index window.

   (b) **INVERSION**
   The INVERSION option enables you to add an inversion from the selected text. Remember, you must first select a text entry. If you don't, an error message will appear in the top window that reads, "You must select something first."

When you select the INVERSION option (and have selected a text entry), a message will appear in the top window that reads, "Move mouse to inversion point, then click a mouse button (any other key to abort)." For example, if you want to add an inversion of the phrase "General George Washington" to the index, move the mouse to the space between the words "George" and "Washington", and click a mouse button. The inversion "Washington, General George" will now appear as a highlighted index entry in the index window.

(c) **OTHER**

The OTHER option lets you add arbitrary words or phrases associated with displayed text to the index. For example, if you have an index consisting of several files and want to be able to quickly find sections of the files that are related to each other in some way that does not appear as an index entry, you should use this option to identify those sections. First, find the place in the text that you want to identify, and display it in the text window. Then, select the OTHER option. A window will now appear that prompts you for "Entry text." Enter the arbitrary word or phrase (for example, something like "terminal-type information"), and press RETURN. The word or phrase will now be listed as an index entry; and when you select this entry, the place in the text to which it refers will appear in the text window.

2. **Delete Entry**

This option lets you mark an index entry as deleted. You must first select the item, either in the text or the index. If an item has not been selected, the screen will flash, and an error message will appear in the top window that reads, "You must first select an entry before asking to Delete one."

When the DELETE ENTRY option is selected, a thin line will be drawn through the selected index entry in the index window, and a "Deleted" message will be displayed on the far right side of the screen. In addition, an insertion will be made in the index file infor-

mation in the top window that reads, "1 deleted entry." If you delete more entries, this message will change accordingly (i.e., if you make 6 deletions, the message will read, "6 deleted entries.")

- If you attempt to delete a previously deleted item, a message will appear in the top window that reads, "This entry is already deleted."
- If there are inversions of the item, after you delete it, a small window will pop up that reads, "There are <some number> undeleted inversions of this entry. Do you want to delete them also? (yes, no or abort)." Note that this option allows you to delete an entry, but keep its inversions.
- If there are other entries that contain the same word list as the item, after you delete it, a small window will pop up that reads, "There are <some number> undeleted entries with the same word list. Do you want to delete them also? (yes, no or abort)."

3. **Undelete Entry**
   This option allows you to mark a deleted index entry as undeleted (i.e., if you change your mind about deleting an item, this option lets you undelete it). As with the delete option, you must first select the entry. If you neglect to select it first, an error message will appear in the top window that reads, "You must select an entry before asking to UnDelete one."

   When the UNDELETE ENTRY option is selected, the "Delete" message to the right of the index entry, the line through the entry, and the "deleted entry" message in the status window will disappear.

   - If you attempt to undelete a non-deleted item, a message will appear in the top window that reads, "This entry is already undeleted."
   - If there are inversions of the item, after you undelete it, a small window will pop up that reads, "There are <some number> deleted inversions of this entry. Do you want to undelete them also? (yes, no or abort)."

- If there are other entries that contain the same word list as the item, after you undelete it, a small window will pop up that reads, "There are <some number> deleted entries with the same word list. Do you want to undelete them also? (yes, no or abort)."

4. **Expunge (locally)**
   This option removes **all** deleted entries. Unlike the delete and undelete options, you do not have to first select an item. When you select this option, a menu pops up that reads, "There have been <some number> deletions. Are you sure you want to Expunge? This action cannot be reversed. Are you sure? (yes, no, or abort key)." As this menu indicates, unlike the delete option, **once you have expunged items, you cannot reverse the process, unless you reread the file (see number 6 below).**

5. **Save Modified Index**
   This option saves the index that you have been modifying/editing. When you select this option, a menu pops up that reads, "There have been *n* changes made since the last save. Saving takes time. Save? (yes, no, or abort key)."

6. **Reread Index Files**
   This option rereads the current index file (i.e., throws away or writes over any editing changes that have been made since the last time the file was saved). When you select this item, a menu pops up that reads, "Changes have been made. Are you sure you want to reread the index and throw away the changes? (yes, no. or abort key)." If you type 'yes', "Load Index File" appears on the righthand side of the top window, and the screen goes blank momentarily. In a few seconds, the original (i.e., unedited/unmodified version) of the index reappears on the screen. **Note: If you have expunged index entries and want to get them back, use this option, and do not save the modified index first.**

7. **ZMACS Edit Text**
   This option allows you to edit the source text. When you select this

option, a ZMACS Editor window pops up. It may take a few seconds as the source file is read, but the source text will shortly appear in the new window. You can now edit the source text.

BE WARNED, if you make any changes in the source text (even a carriage return), it will affect the indexer interface; the boxed regions in the index and text may not correspond exactly.

5 Troubleshooting

This section describes problems that may arise when using the TMC Indexer^{TM} and what to do should they occur. Call your service representative if you encounter a problem that you cannot solve.

- **When in doubt, press HELP**
  You can type ?, or the **HELP** key on your keyboard in any Indexer screen or menu to pop up an appropriate Help Menu.

- **Getting back into the INDEX EDITOR**
  If you should inadvertently get out of the Indexer Editor screen, you can always get back to it by first pressing the **SELECT** key and then the letter **U** on your keyboard.

  NOTE: If you do not yet have an index loaded in the Index Editor screen, do not attempt to go from the LISP Listener to the Index Editor via the SELECT-U command.

- **Getting back into the Interface**
  To reaccess the Indexer interface (for example, from a LISP Listener or ZMACS editor), first press the **SELECT** key and then the letter **Z** on your keyboard.

- **Abort, Control-Abort, and Meta-Control-Abort**
  Pressing the ABORT key (or, if that doesn't work, Control-Abort or Meta-Control-Abort) is often a good way to recover when you are stuck in a screen.

- **Persistent Menus**
  If a menu appears on your screen (for example, one of the small prompting menus) that you cannot get rid of (it may be accompanied by the message "Sheet Lock" at the bottom center of the screen), first press the FUNCTION key and then simultaneously the CONTROL and T keys.

- **Process Errors**
  If you should ever get an error in the top window that reads something

like, "Process <something> got an error," or if the word "Selected" appears at the bottom center of the screen, sequentially press the FUNCTION, 0, and S keys to recover.

- **Getting out of a System Menu**
  When you are in the Index Editor and click the right mouse button, a small "mouse" menu of operations will pop up. If you should inadvertently click right twice, however, a system menu will pop up. Move the mouse cursor out of this menu, and it will disappear from the screen.

- **Flashing Screen**
  If you type a command that the TMC Indexer ^{TM} does not expect, the screen will flash briefly, and your command will be ignored. In addition, an error message, telling you what was wrong or what it actually expects, often appears at the left side of the top window. To clear the screen of the error message, press the REFRESH key (or, if you are in a menu, press **d** for DISPLAY).

- **Mouse Button Blip**
  To select an item with the mouse, the left mouse button must be clicked. If you try to select an item with another button, the screen will flash and a message will appear in the lower left corner of the screen that reads, "Unexpected blip = MOUSE BUTTON..." To recover, click the **LEFT** mouse button.

- **Mouse Documentation Line – An Information Source**
  The mouse documentation line near the bottom of the screen usually displays the actions that will result from clicking any of the mouse buttons. When the mouse cursor is in a menu of operations, however, this line displays information about the boxed item in the menu. For example, if the option 'find' is boxed in a mouse menu, a message appears on the mouse documentation line that reads, "Various kinds of search."

- **Booting the Machine**
  If you are unable to recover from an error, boot the machine as a last

resort. See Section 2.5, Booting the LISP Machine.

6 TMC Indexer^{TM} Features Description

This section of the manual is an extension of Section 4, Using the TMC Indexer^{TM}.

6.1 Indexing Parameters

The core of the TMC Indexer^{TM} is a series of heuristic and semantic filters that scan the input text, extracting relevant phrases for the index and discarding excess verbiage. Some words that are almost never used in index entries, such as 'is', are eliminated immediately. But the bulk of the work is done by linguistic analysis, which identifies potential indexable noun phrases from sentences. Verbs and conjunctions, which are rarely useful in indexes, are left behind. Additional routines give special treatment to italicized and boldface phrases and to section headings; a series of semantic experts pick out proper names, place names, and other entries which might otherwise be lost; in a final phase, these entries are winnowed by built-in and user selectable criteria (i.e., indexing parameters), and organized alphabetically with items inverted where appropriate. The result is a database of important phrases and their locations in the text.

INDEXING PARAMETERS allow users to customize the system to suit their particular indexing needs.

When the "Index New Text" option is selected in the top level menu, a small window (Figure 16) pops up.

- Note that the default values (i.e., values currently in effect) are enclosed in angle brackets.
- If the default value is to remain the same, press RETURN; otherwise, type in the desired value.
- If all remaining default values are to remain the same and/or to exit this window after the desired parameters have been changed, simultaneously press the CONTROL and COMPLETE keys.

```
Indexer Parameters - Return for default, Abort to abort, Help for help.
Force re-indexing for files already indexed (Yes or No) <Yes>: ■

Print index to ZMacs buffer after indexing (Yes or No) <No>:

Index only keywords (Yes or No) <No>:

Minimum for non-orthographically marked entry selection <2.>:

File name for user list of phrases to save <None>:

File name for user list of words to omit <None>:

File name for user list of words to invert on <None>:

Generate only pre-index (will not be displayable) (Yes or No) <No>:
```

Figure 16: Indexer Parameters

- To move around in the Indexer Parameters window, press CONTROL-N to go to the NEXT parameter or CONTROL-P to go to the PREVIOUS parameter.
- Press the REFRESH key to refresh the window.
- Press the ABORT key to exit the Indexer Parameters window and stop the indexing process.
- Press the HELP key to obtain the preceding information.

6.2 The Structure of An Index

The index that appears on the screen when one reads or edits an index is called the "master index." A master index may cover many text files. It is important to be able to add or modify text, and update the master index without having to completely re-index all the text. Therefore, users are encouraged to break text up into a number of relatively small (5 - 20 Kbyte) text files. The Indexer assumes that a master index will cover

many separate text files. The Indexer first generates a "pre-index" for each file; all the pre-indexes are collected to construct a master index. If one text file is changed, or added, it can be pre-indexed separately, and then a new master index can be generated from the new pre-index and all the old pre-indexes. Even if a text consists of only one file, a pre-index is always generated first, and the master index is generated from the pre-index.

1. **Force re-indexing for files already indexed**
   The "Force re-indexing for files already indexed" option gives the user the choice of creating another pre-index of a file that has already been indexed. A previously indexed file should be re-indexed if the indexing parameters or the text have changed since the first indexing. Consult section 6.3, Multiple File Indexing, for a detailed discussion of creating a master index from several pre-indexes.

2. **Print index to ZMACS buffer after indexing**
   This option gives the user the choice of printing the newly created index to the ZMACS buffer. When an index has been printed to the ZMACS buffer, it can be edited in the ZMACS editor screen. In future releases of the TMC Indexer™, it will be possible to produce a hardcopy of the index if it has been printed to the ZMACS buffer.

3. **Index only keywords**
   This option gives the user the choice of indexing ONLY keywords. These keywords are selected by the user and saved in a file (see 5 below).

   Keywords can be single words or combinations of words (i.e., phrases). If, for example, someone wants to index only the words 'the' and 'a' in a document, the value 'yes' should be given to the "Index only keywords" parameter, and a file should be created that contains these words. See 5 below on creating such a file.

4. **Minimum for non-orthographically marked entry selection**
   As previously mentioned, special treatment is given to capitalized, italicized, or boldfaced words or phrases in the text. These 'special' words are called orthographically marked words. The "Minimum for non-orthographically marked entry selection" option lets

the user specify how many times a non-orthographically marked (i.e., not capitalized, italicized, boldfaced, or otherwise distinctive) word must appear in the text in order for it to be used as an index entry.

5. **File name for user list of phrases to save**
   If the user wants to index only keywords (i.e., single words or combinations of words) or wants to make sure that words that might be left behind in the indexing process (for example, verbs and conjunctions) are indexed, a file must be created that contains these user-selected words.

   Create a file (consult your local system maintainer if you do not know how to create a file), and use the following format for listing words that are to be included in the index:

   - Single words that are to be saved are entered as a list of lists with quotation marks around each word:

     (...
     ("<word-a>")
     ("<word-b>")...
     ("<word-n>")
     ...)

     As a concrete example, including the list (("and" "the")) in the indexing save file would force all occurrences of "and" and "the" to be indexed.

   - Combinations of words (phrases) to be saved are also entered as a list of lists with quotation marks around each word:

     (...
     ("<word-a>" "<word-b>")
     ("<word-c>" "<word-d>")...
     ("<word-y>" "<word-z>") ...)

Note that in the first example, word-a, word-b, and any other single words enclosed by parentheses will be indexed. In the second example, however, word-a will be indexed **only** if it appears as a phrase in combination with word-b.

A concrete example of such a list is:

(("value" "added")
("indexer" "system")
("new" "product")
("artificial" "intelligence"))

In the concrete example, the system would index all occurrences of "artificial intelligence", but might or might not index "artificial" or "intelligence" if they didn't occur together.

6. **File name for user list of words to omit**
   If the user wants to omit words from the index that might otherwise be indexed, a file must be created that contains these user-selected words.

   Create a file, and use the following format (i.e., a list of words with quotation marks around each word) to list words that are to be omitted in the indexing process:

("<word-a>"
"<word-b>"...
"<word-n>")

   Note that in this case, the entire list of words is enclosed in parentheses, rather than the individual words themselves.

7. **File name for user list of words to invert on**
   If the user has a list of words to be inverted on that might not be inverted by the system, a file must be created that contains these user-selected words.

Create a file, and use the following format (i.e., lists of words with quotation marks around each word) to list words that are to be inverted:

("<word-a>"
"<word-b>"...
"<word-n>")

8. **Generate only pre-index (will not be displayable)**
   See Section 6.3 below.

6.3 Multiple File Indexing

The TMC Indexer^{TM} allows the user to create a master index from several source files.

After the user has reviewed and possibly changed the indexing parameters, a small menu will appear that prompts the user for the name of the file to be indexed. Once a file name has been typed in, another small menu will appear that prompts the user for the next file name. If only one file is going to be used to create the master index, press RETURN in response to the second menu prompt to terminate the list of files to be indexed.

For multiple files, the first file name given to the system is usually used to create the file name for the master index. For example, if the first file given to the system for a multiple file master index is "foo.text", the master index name will be "foo!text.master."If the master index is not listed in the Existing File Selection menu, the user can access this master index by selecting the OTHER option in the Existing File Selection and typing in "foo.text."

If the master index is moved or renamed, however, the user should choose the EXPLICIT option in the Existing File Selection to access the master index. The name entered in response to the file name prompt is the explicit master index file name. As mentioned above in the "foo.text" example, the explicit master index file name is "foo!text.master."

In creating a master index for multiple files, the user can specify the file names in a number of different ways. The options below are <u>not</u> mutually

exclusive; one may specify some files in one way (e.g. by literal names) and some in other ways (e.g. using "wild card" conventions).

1. **Type in literal file names**
   The literal names of the files can be entered one-by-one in response to the menu prompts described above. (When the last file has been indexed, press RETURN to tell the system that you are done.)

   This procedure is suitable when only a few file names must be entered, but it is not a very efficient method if many file names are involved. If many files (or directories) are going to be indexed, the following two methods are better suited to the task:

2. **Create a file that contains a list of all of the file names to be indexed**
   For example, a file could be created with the pathname "a: >u>janet>files", that contains the following:

   ("a: >u>foo>bar"
   "a: >u>tmc>indexer"
   "a: >u>john>doe")

   If an @ symbol, followed by the file name containing the list of files to be indexed (i.e., @a: >u>janet>files) is entered in response to the first file name menu prompt, all the files listed in this "master" file will then be indexed (i.e., a: >u>foo>bar, a: >u>tmc>indexer, a: >u>john>doe).

3. **Use "Wild Cards" to index all files in a directory**
   To index all files in a particular directory, use the asterisk character (*) as a wild card. Wild card characters match anything; thus, to indicate that all files in a directory are to be indexed, put an asterisk in the file name portion of the pathname. For example, to indicate that all files in the directory '>u>janet' are to be indexed, enter the following in response to the indexing file name prompt:

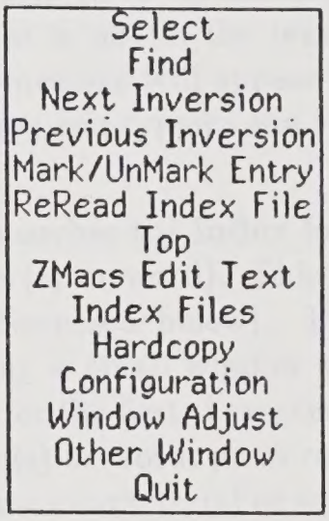
   a: >u>janet>*

Similarly, to index all files in all subdirectories, put two asterisks in the appropriate portions of the pathname. For example, to indicate that all files in all subdirectories in the directory '>u>janet' are to be indexed, enter the following in response to the indexing file name prompt:

a: >u>janet>*>*

6.4 Mouse Menu of Operations in Read-Only Mode

When you are in the Index Editor screen reading an existing index, if you click the right mouse button, the following menu of operations will pop up:



With the exception of the SELECT option, all of the operations in this menu can be performed by typing the first letter of the option or by moving around the mouse and clicking on the option.

The operations that can be performed with this menu are as follows:

1. **Select**

   When you move the mouse pointer to the SELECT option in the menu and click any mouse button, the last "captured" item (i.e., item you pointed to with the mouse that resulted in a box around the item)

will be selected. Remember, you can tell when an item is selected because it will appear highlighted.

2. **Find**
When you move the mouse pointer to the FIND option in the menu and click any mouse button, another smaller menu will pop up with the following options:

   (a) **Text**
   This option searches the **text** for a specified string. If you click any mouse button on this option, a small window will appear on the screen that prompts you for a string of characters to search for. Type the string, press return, and a small dark box will flash on the first letter of the search string. If you search for something that is not in the text, the screen will flash briefly, and an error message will appear in the top window that reads, "String <string you typed> not found in text."

   (b) **First**
   This option searches the **index** for a specified initial string (i.e., first character(s) or word). This operation is much faster than (c), **Any** (discussed below). If you click any mouse button on this option, a small window will appear on the screen that prompts you for the first character(s) or word to search for. Type the character(s) or word, press return, and the index entry that begins with the character(s) or word you typed will appear highlighted in the index window. The index entry will also appear highlighted in the text. If you search for something that is not the first string of any index entry, the screen will flash, and an error message will appear in the top window that reads, "Unable to find <word or character(s) you typed> as the first of any index entry."

   (c) **Any**
   This option searches the **index** for a specified string; however, this option is quite slow when compared to **First**, described in the preceding paragraph. If you click any mouse button on this

option, a small window will appear on the screen that prompts you for a string of characters to search for. Type the string, press return, and the string you typed will appear highlighted in the index window, as well as in the text window. If you typed in something that is not in any index entry, the screen will flash, and an error message will appear in the top window that reads, "Unable to find <string you typed> in any index entry"

(d) **Incremental**
This option searches the **index** incrementally for terms that begin with a specified string. If you click any mouse button on this option, a message will appear in the top window that reads, "Incremental Find (Return or Abort to terminate)." As you type in each character, the index entry that contains these characters will appear highlighted in the index window. Typing RUBOUT will cause the search string to be shortened by one character. Press return, and the index entry containing the characters will also appear highlighted in the text window. If you type in characters that do not appear in an index item, the screen will flash. Press RETURN or ABORT to end the search.

(e) **Mark**
This option finds the last "marked" index entry. If you click on this option and there are no marked index entries, the screen will flash, and an error message will appear in the top window that reads, "There are no marked entries." If there is a marked entry (see 5 in this section on how to mark entries), clicking on the Mark option will highlight the entry in both the text and index windows. Note that this option first finds the last entry you marked, and if pressed repeatedly, finds the marked entries in the reverse order in which you marked them.

Remember, you can also select the FIND option by typing F. When you do this, a message will appear in the top window that reads, "Find: Text, First, Any, Incremental, or Mark (T, F, A, I, M, Return key for last find, or Abort Key)." Type T, F, A, I, or M to select options (a) through (e) above, or press the RETURN key on the

keyboard to find the last item you searched for. Press the ABORT key on your keyboard, and your search will be aborted.

3. **Next Inversion**
   See Section 3.3.5, **How to Select a Next Inversion**

4. **Previous Inversion**
   See Section 3.3.4, **How to Select a Previous Inversion**

5. **Mark/Unmark Entry**
   This option marks an index entry. Before you can mark an index entry, however, you must first select it (i.e., move the mouse pointer to the entry and click left, which will highlight the entry, or press CONTROL-N or CONTROL-P). Once you have selected an entry and clicked the right mouse button to pop up the menu of operations, when you move the pointer to the MARK option in the menu and click any mouse button, a dotted arrow will appear to the right of the index entry. In the same way that a highlighted entry signals selection, an index entry with a dotted arrow next to it signals that it is a marked entry.

   To unmark a marked index entry: select the entry, click right with the mouse to pop up the menu of operations, and click any mouse button on the MARK option. Remember that a marked entry has a dotted arrow next to it. When you unmark an entry, this arrow disappears.

   Again, you can select the MARK ENTRY option by typing M. If you have forgotten to select an item first, however, the screen will flash, and an error message will be displayed at the top left of the screen that reads, "You must select an entry before asking to Mark one."

6. **Top**
   When you type T or move the mouse pointer to the TOP option in the menu and click any mouse button, it brings you back to the top level menu in the Indexer. If you type this inadvertently, you can get back to the index by typing SELECT-U.

7. **Index Files**
   This option produces an index from a list of files. See Section 3.4, How to Index New Text.

8. **ZMACS Edit Text**
   This option lets you read the source text in the ZMACS Editor window. When you select it, the ZMACS Editor window pops up. It may take a few seconds as the source file is read, but the source text will shortly appear. You can now READ the source text. If you try to make any changes in the text, the screen will flash, and a message will appear at the bottom of the screen that reads, "Read-Only – do a META - CONTROL - ~ to set NOT read-only." Accordingly, when you press the META-CONTROL-~ keys, the read-only message will disappear, and you can now edit the source text. For a complete discussion of editing, see Section 4, Editing an Index – An Advanced Operation.

   NOTE: If you edit the text, the index may no longer correspond to it properly, and you will have to reindex the entire text.

   To exit the ZMACS Editor window, press SELECT and then U on the keyboard.

9. **Hardcopy**
   This option is not implemented in the first release of the TMC Indexer™; if you select it, the screen will flash, and an error message will appear at the top left of the screen that reads, "Not Yet Implemented."

10. **Configuration**
    This option modifies indexing parameters. When you select this option, a menu pops up that reads, "Return for Default, Abort to Abort Select after find (y or n) <y>."

    The default value (i.e., the value currently in effect) is the value enclosed by angle brackets at the end of the message. In this case, the default for "select after find" is yes (i.e., <y>). This means that

when you use the FIND option, the string you find will also appear highlighted in the other window. If you want strings to be selected after they are found, press RETURN to keep the default value at <y>.

If you do not want "found" items to appear highlighted in the other window, type in "N."

For example, when you select the FIRST find option, the index is searched for a specified initial string. If the "Select after Find" parameter is in effect (i.e., default value of 'y'), when the string is found in the index, it is selected – the string will appear highlighted in both windows. If the value for "Select after Find" is set to be 'n', the string will only be found (and highlighted) in the index window. The string will NOT be selected, so it will not appear highlighted in the text window.

11. **Window Adjust**
This option allows you to move the border between the text and index windows. If, for example, you want to see more of the text and less of the index on the screen, you can easily make the adjustment with the Window Adjust option.

When you type W or move the mouse pointer to the WINDOW ADJUST option in the menu and click any mouse button, a message appears in the top window that reads, "Move mouse to where you want the division between windows, then click a mouse button (any other key to abort)." Notice that when you make this selection, a thin black line appears above the mouse pointer. When you move the mouse, the line moves correspondingly. As the message indicates, when the line is where you want the division between windows, click any mouse button to adjust the screen. If you change your mind and decide you don't want to adjust the windows, press any letter on the keyboard to abort the WINDOW ADJUST selection.

12. **Other Window**
This option allows you to switch from the text to the index window (or vice versa), depending on which window you are currently in. For

example, if you are in the text window, you can quickly move down to the index window by using the OTHER WINDOW option (i.e., type O or click the right mouse button to pop up the menu of operations).

13. **Quit**
    When you are in the Index Editor, the QUIT option allows you to exit the Indexer, returning you to what called it. When you use this option, you should see the screen you were in when you logged in to the LISP machine. NOTE: When you are in other windows, QUIT does not necessarily exit the Indexer. For example, if you went from the Index Editor screen to the Top Level menu and then selected QUIT, you would get back the Index Editor screen.

Remember, with the exception of the SELECT option, all of the above menu options can also be selected by typing the first letter of the option. In general, when you type the first letter of the option, a message will appear in the top window that tells you what to do next.

6.5 Mouse Sensitive Regions

There are certain regions on the Index Editor screen that are known as mouse sensitive regions (see Figure 17).

When you bang the mouse pointer against these regions, the pointer becomes a thick dark double-headed arrow. Mouse sensitive regions enable you to scan or scroll through the text quickly and easily.

6.5.1 Left Wall Bars

1. If you bang the mouse against the left wall, you should get a thick arrow near the left wall.

2. When you **click left** on the mouse button, it brings the moused line (i.e., line next to the mouse arrow) to the **top** of the screen.

3. When you **click left twice**, it brings the moused line to the **bottom** of the screen.

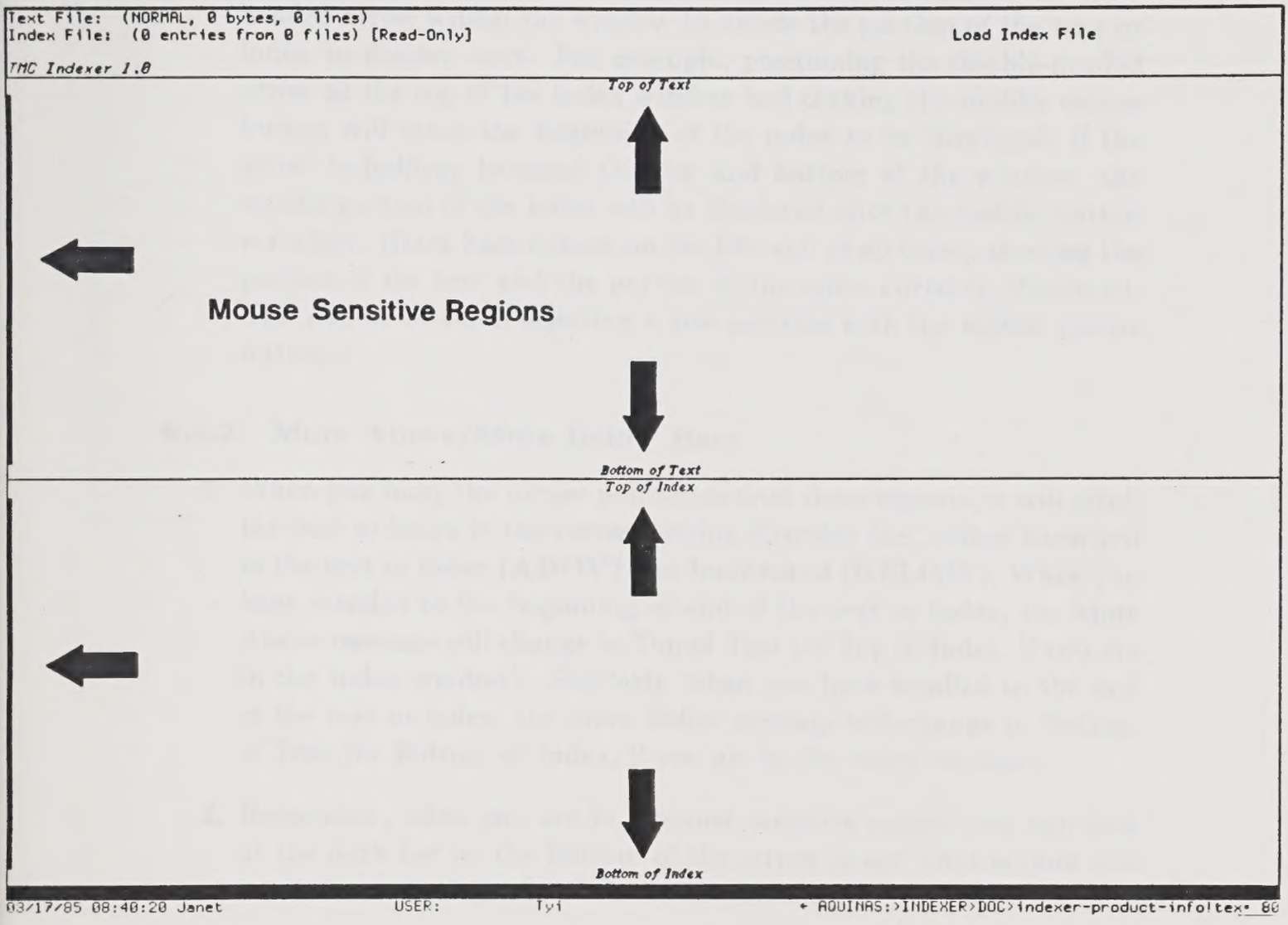


Figure 17: Mouse Sensitive Regions

4. When you **click right**, it brings the **top line on the screen down to the mouse arrow.**

5. When you **click middle**, the system uses the position of the double-headed arrow within the window to decide the portion of the text or index to display next. For example, positioning the double-headed arrow at the top of the index window and clicking the middle mouse button will cause the beginning of the index to be displayed; if the arrow is halfway between the top and bottom of the window, the middle portion of the index will be displayed after the middle button is clicked. (Dark bars appear on the left wall at all times, showing the portion of the text and the portion of the index currently displayed. This can be of aid in selecting a new position with the middle mouse button.)

6.5.2 More Above/More Below Bars

1. When you bang the mouse pointer against these regions, it will scroll the text or index in the corresponding direction (i.e., either **forward** in the text or index (**ABOVE**) or **backward** (**BELOW**). When you have scrolled to the beginning or end of the text or index, the More Above message will change to Top of Text (or Top of Index, if you are in the index window). Similarly, when you have scrolled to the end of the text or index, the More Below message will change to Bottom of Text (or Bottom of Index, if you are in the index window).

2. Remember, when you are in a mouse sensitive region, you can look at the dark bar on the bottom of the screen to see what actions will result from clicking any of the mouse buttons.

6.5.3 Scroll and Hyper-Scroll: Scroll Mouse Alternatives

In the lower right corner of your keyboard are two keys, HYPER and SCROLL (see Figure 18). These keys also let you scroll quickly and easily through the text or index.

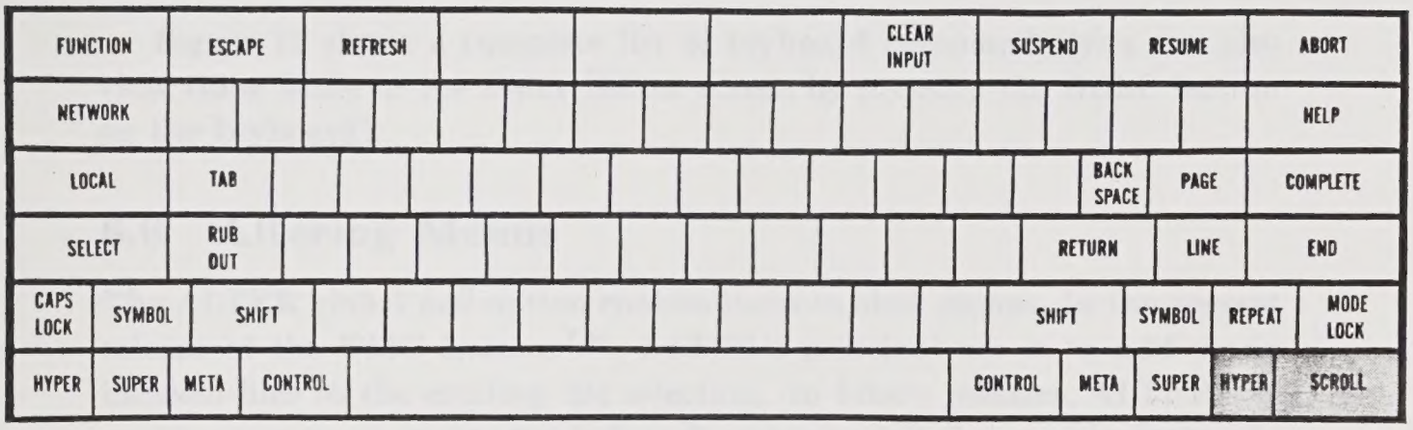


Figure 18: Scroll and Hyper

1. **SCROLL**
   When you press the SCROLL key, the text or index (depending on which window you are in) will move up one line. (In general, most users eventually find the keys more convenient to use than the mouse.)

2. **HYPER - SCROLL**
   When you press both the HYPER and SCROLL keys at the same time (HYPER - SCROLL), the text or index (depending on which window you are in) will move down one line.

Figure 19 shows a complete list of keyboard commands (you can also view these while in the Index Editor screen by pressing the HELP button on the keyboard).

6.6 Altering Menus

The ALTER global pad option enables users to alter menus. In the present release of the TMC Indexer^{TM}, ALTER's principal use is to add newly indexed files to the existing file selection. In future releases, ALTER will enable users to customize the Indexer's menus to suit their particular needs.

When you press the HELP key in ALTER mode, the menu shown in Figure 20 will appear.

NOTES:

- To exit from the Menu Editor HELP screen, type any character.
- To exit from ALTER mode, type Control-C. If you attempt to exit ALTER mode by typing some other character, the screen will flash, and an error message will appear in the lower left corner of the screen that reads, 'Unexpected character <character you typed>.'
- For most commands, you must first select a menu item before executing the command.
- If you want to alter a menu, you must first write enable it with the Write Enable function in the Menu Maintenance Utilities (see number 3 in Section 6.7).

TMC INDEXER: Index Editor

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The Index Editor has three windows. The top window is a status display and user interaction window. The middle window is for the display of portions of text that have been indexed. The lower window is for portions of an index. Selection is made by pointing to an index entry or a text item (the underlined sections) and clicking the left mouse button. When you select something, the corresponding item will also be selected in the other window.

Read-Only mode is used for browsing, and while in that mode some of the commands below are disabled (as noted). The index window lists index entries with the following information: (1) if the index is to more than one text file, the text file name is listed; (2) the percentage into the text file of the entry; (3) the number of inversions of this entry.

Commands are selected either by menu or by keystroke. A menu pops up when the right mouse button is clicked. The first letters of menu commands are unique, and they are the characters you type for keyboard commands (plus several others). Here is the complete set of keyboard commands:

```
meta-<        - Move to beginning of text or index (depending on which window the mouse is in)
meta->        - Move to end of text or index
scroll        - Move down one index entry or text line
hyper-scroll  - Move up one index entry or text line
control-V     - Move down one page
meta-V        - Move up one page
control-N     - Select next index entry or text item (first if none is selected)
control-P     - Select previous index entry or text item (last if none is selected)
control-L     - Redisplay
Refresh       - Redisplay
Help, ?       - This message

A, a          - Add Index entry (not available in Read-Only)
C, c          - Configuration: modify Indexer parameters
D, d          - Delete selected Index entry (not available in Read-Only)
E, e          - Expunge deleted Index entries (not available in Read-Only)
F, f          - Find
H, h          - Hardcopy
I, i          - Index new files
M, m          - Mark selected Index entry (or unmark it if it is marked)
N, n          - Next Index inversion: if there is an inversion of the selected entry below it, select that inversion
O, o          - Other window (switch between text and index windows)
P, p          - Previous Index inversion: if there is an inversion of the selected entry above it, select that inversion
Q, q          - Quit (leave the Index Editor; Select-U will get you back)
R, r          - ReRead Index file (throw away changes; reread index and text)
S, s          - Save modified index (not available in Read-Only)
T, t          - Top of Indexer Front End
U, u          - UnDelete Index entry (not available in Read-Only)
W, w          - Window adjustment (prompts for new setting of border between text and index windows)
Z, z          - ZMacs: Edit text

                    ====> Type any character to go back to the Index Editor <=====
```

04/14/85 11:03:30 Janet USER: lyi OFILE serving BOIOLPH

Figure 19: The Index Editor HELP Menu – Keyboard Commands

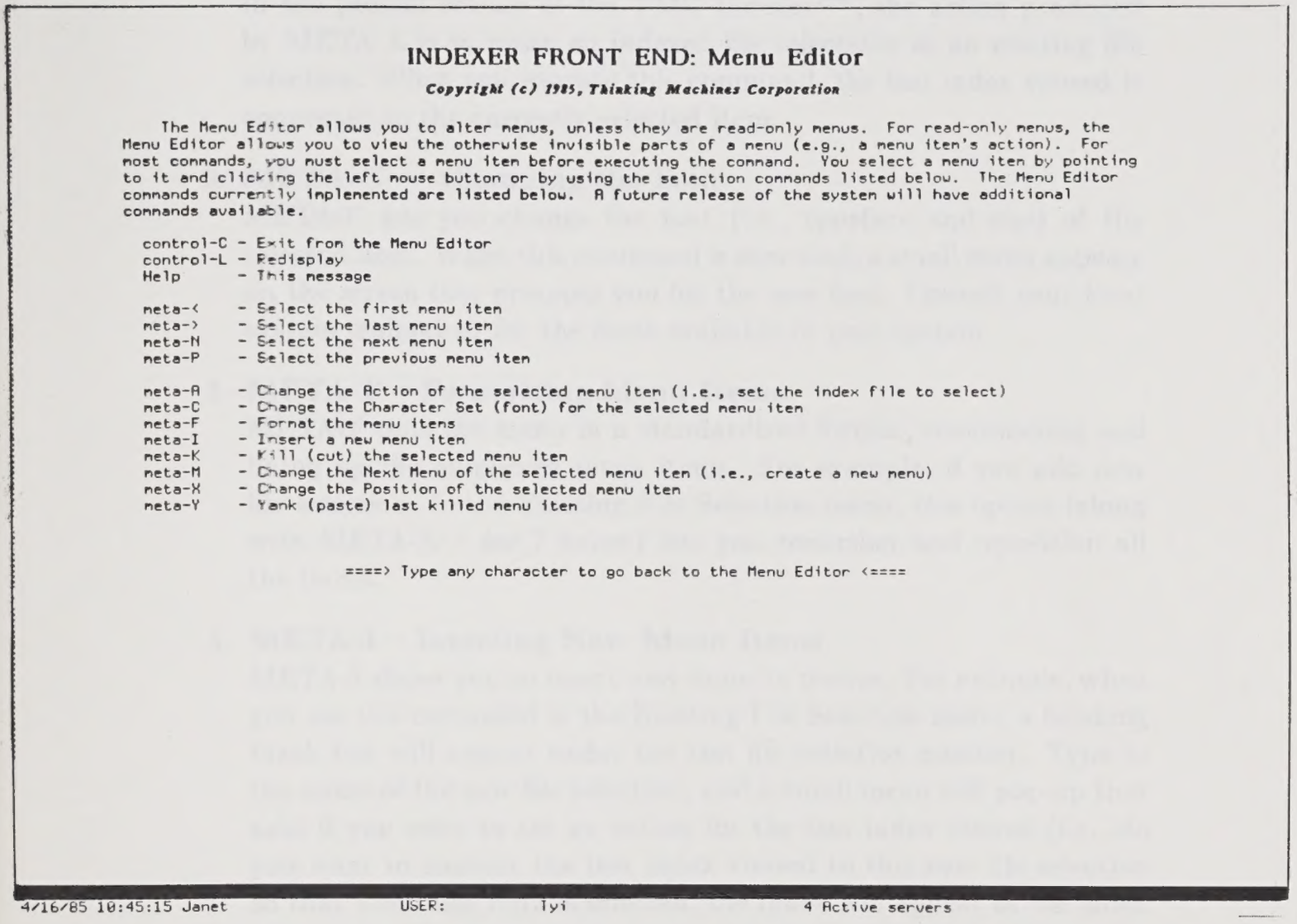

Figure 20: Indexer Front End: Menu Editor

ALTER mode commands:

1. **META-A – Changing the Action**
   In the present release of the TMC Indexer™, the action produced by META-A is to make an indexed file selectable as an existing file selection. When you execute this command, the last index viewed is connected to the currently selected item.

2. **META-C — Changing the Font**
   META-C lets you change the font (i.e., typeface and size) of the selected item. When this command is executed, a small menu appears on the screen that prompts you for the new font. Consult your local system maintainer for the fonts available in your system.

3. **META-F – Formatting Menu Items**
   META-F puts the menu in a standardized format, renumbering and lining up the numbered menu items. For example, if you add new file selections to the Existing File Selection menu, this option (along with META-X – see 7 below) lets you renumber and reposition all the items.

4. **META-I – Inserting New Menu Items**
   META-I allows you to insert new items in menus. For example, when you use this command in the Existing File Selection menu, a blinking black box will appear under the last file selection number. Type in the name of the new file selection, and a small menu will pop up that asks if you want to set an action for the last index viewed (i.e., do you want to connect the last index viewed to this new file selection so that when this item is selected, the index will appear in the index editor screen). If no action is set, another small menu will appear that asks if you want to create a new menu. If you type in 'yes' to this prompt, another small menu will appear that asks for the title of the new frame. META-M (Item 6 below) also enables you to create new menus.

5. **META-K – Killing the Selected Menu Item**
   META-K allows you to kill or cut a selected menu item. When you

execute this command, a small menu will appear that reads, "Are you sure you want to delete this item?" A 'y' response will cause the selected item to disappear from the screen.

NOTE: If the selected item has a next menu, that menu and all below it in the hierarchy of menus will be killed too.

6. **META-M - Creating Sub-Menus**

META-M allows you to create and add sub-menus to the Indexer's hierarchical menu system.

An example of a sub-menu in the Indexer is the Existing File Selection menu. When the Read or Edit Existing Index options are selected from the Top Level menu, the Existing File Selection menu appears; this menu can be thought of as existing below (i.e., as a sub-menu of) the Top Level menu in the Indexer's hierarchical menu system.

When a new sub-menu is created, it must be connected to a menu item in the same way that the Existing File Selection menu is connected to the Read and Edit items in the Top Level menu.

NOTES:

- As with all alter commands, the menu to be altered (i.e., the menu from which you will create a sub-menu) must first be write enabled (see Item 3 in Section 6.7).
- You must select a menu item before creating a new menu.
- The new sub-menu becomes part of this selected menu item; when the selected item is chosen, the new sub-menu will pop up. Similarly, if the item is deleted, the menu that exists below it (i.e., the new sub-menu) will also be deleted.
- You cannot create a sub-menu and connect it to a menu item that already has an action associated with it. For example, the "Sample: Connection Machine Overview" item in the Existing File Selection menu calls up an existing indexed file; if you try to connect a new sub-menu to this item (by selecting the item and

then pressing the META and M keys), a message will appear in the lower left corner of the screen that reads, "This menu item has an action; cannot set next menu."

In the present release of the Indexer, the META-I command is the most efficient way to create a new sub-menu. To create a sub-menu with the META-I command, do the following:

(a) Make sure the menu you wish to add the sub-menu to is write enabled (see Item 3 in Section 6.7).

(b) Type **a** or select the **Alter** global pad at the bottom of the menu.

(c) You will be prompted for a password. If you do not know the password, consult your local system administrator.

(d) Press META-I to insert a new menu item.

(e) Type in the name you wish to give the item, and press return.

(f) You will be asked if you want to set an action for the item. Type in 'no'.

(g) You will now be asked if you want to create a new menu. Type in 'yes'.

(h) You will now be prompted for the title of the new frame. Type in the title as you want it to appear on the new menu. Remember, you can use other alter commands (for example, the META-C command, to change the font) once the menu has been created.

(i) To exit alter mode, press CONTROL-C on your keyboard.

(j) You will now be asked if you want to save the changes you have made. Type in 'y'.

(k) You must also save the newly created menu with the Menu Maintenance Utilities (see Section 6.7). Until you do so, all changes are viewed as temporary by the system.

The new sub-menu will now appear when you select the menu item to which it is connected.

7. **META-X – Changing the Position of the Selected Menu Item**
   META-X allows you to change the position of menu items. When you execute this command, a small menu will appear that reads, "Do you want the position restricted? (center, vertical, horizontal, or return for no restriction)." A vertical restriction, for example, allows you to move the item up and down the x-axis, while a horizontal restriction allows you to move it side to side along the y-axis. When you have positioned the item satisfactorily, click any mouse button. Any other key will abort the reposition command.

   NOTE: If you move an item and need to renumber everything as a result, press META-F to format the items.

8. **META-Y – Yank Last Killed Menu Item**
   META-Y allows you to yank or paste the last killed item (i.e., last item on which you performed a META-K).

When you exit ALTER mode (i.e., CONTROL-C), if you have made changes, a small menu will appear that asks if you want to save the changes. If you do want to save the changes, type 'y'.

IMPORTANT NOTE: You must also save the modified menu with the Menu Maintenance Utilities (see Section 6.7). Until you do so, all changes are viewed as temporary by the system!

Using ALTER Mode to add newly indexed files to the existing file selection:

1. After you have indexed new files, a small menu will appear on the screen that asks if you want to put the new index in the menu hierarchy. Type 'y', which will bring you to the Existing File Selection menu. Then move around the file selection menu hierarchy until you get to the menu in which you want to add the new index.

2. Select the ALTER option near the bottom of the screen.

3. You will now be asked for a password. Type in the password, and press RETURN. Consult your system maintainer if you don't know the password.

4. Press META-I (to insert a new menu item).

5. A blinking cursor will now appear under the last existing file selection. Type in the selection number and name you want to give your new index. It need not be the same as the file – you can type any convenient or appropriate name.

6. Press RETURN, and everything you typed in will appear highlighted. NOTE: If you want to type more than one line of text, press the LINE key to start a new line.

7. A small window will appear on the screen that asks if you want to set an action for the last index viewed. Type "yes," and press RETURN.

8. Press CONTROL-C to exit Alter mode.

IMPORTANT NOTE: Until you save the modified menus, all changes are viewed as temporary by the system!

9. A small window will appear on the screen that asks if you want to save the changes you have just made. Type "y."

10. Now select the Utilities option on the bottom of the screen. This will bring you to the Menu Maintenance Utilities screen.

11. Select the "Save Modified Menus" option.

12. You will now be asked for a password. Type in the password, and press RETURN. Consult your system maintainer if you don't know the password.

The newly indexed file now exists as an existing file selection.

6.7 Menu Maintenance Utilities

When you select the UTILITIES global pad, the menu shown in Figure 21 will appear.

NOTE: The utility functions are not intended for general use, and most of them require a password.

Menu Maintenance Utilities:

1. **Information on Last Menu**
   When this function is selected, information about the last displayed menu will be presented in the lower left corner of the screen. The displayed information includes the creation date, the modification date, the person who performed the creation/modification, and whether or not the menu is write protected.

2. **Global Pads Menu**
   This function provides the user with a path to the global pads if they are to be changed. In this release of the TMC Indexer^{TM}, no new actions can be set to the global pads.

3. **Write Enable Last Menu (password required)**
   When this function is selected, a small window will appear that prompts for a password. Once the correct password has been entered, a message will appear in the lower left corner of the screen that reads, "Now write enabled." The last menu displayed can now be altered.

4. **Write Protect Last Menu (password required)**
   When this function is selected, a small window will appear that prompts for a password. Once the correct password has been entered, a message will appear in the lower left corner of the screen that reads, "Now write protected." The last menu displayed cannot be altered unless it is write enabled.

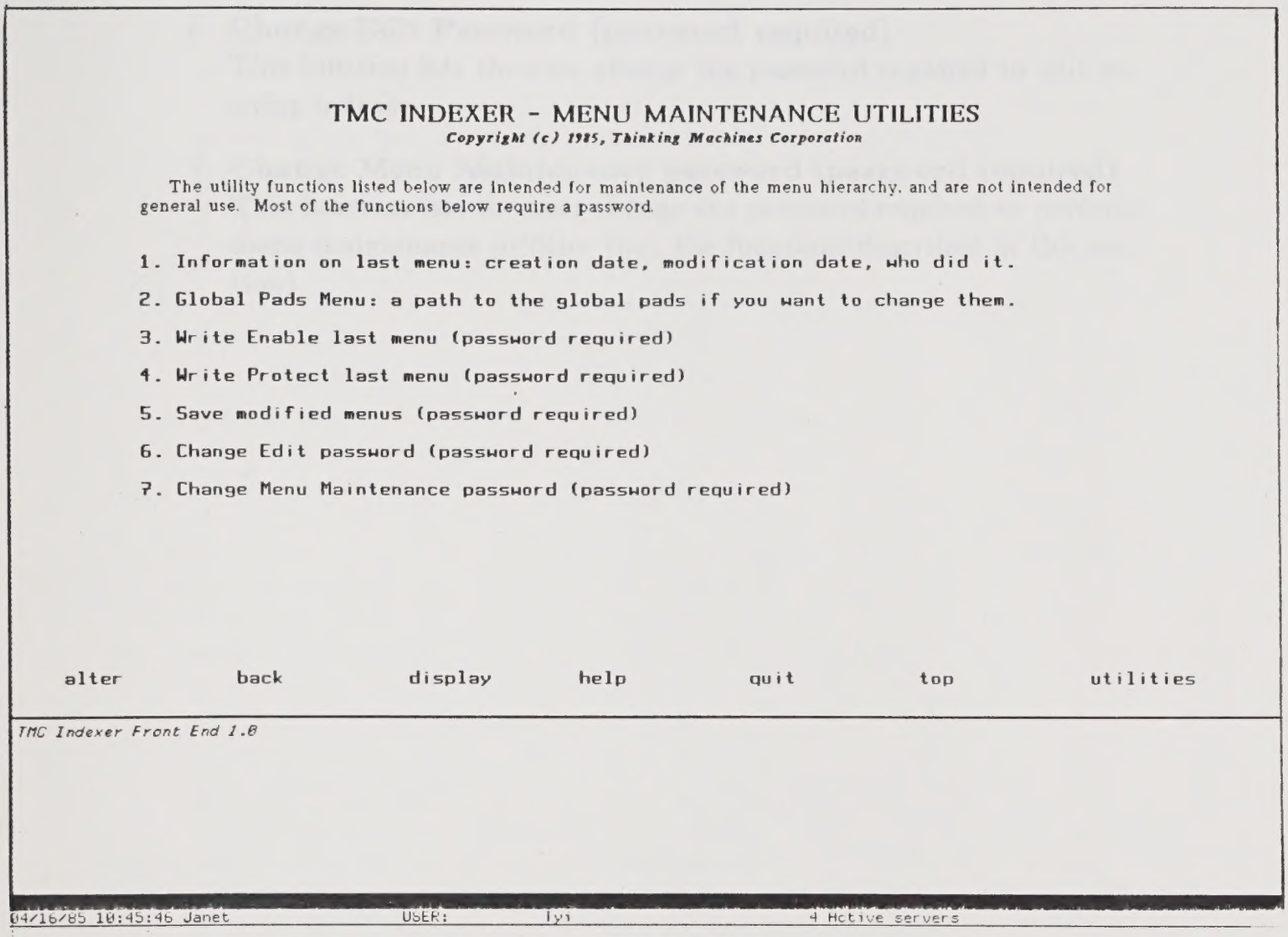

Figure 21: Menu Maintenance Utilities

5. **Save Modified Menus (password required)**
   This function saves all modified menus. When the user alters menus with the ALTER global pad, all changes are viewed as temporary until they have been saved with this function.

6. **Change Edit Password (password required)**
   This function lets the user change the password required to edit existing indexes.

7. **Change Menu Maintenance password (password required)**
   This function lets the user change the password required to perform menu maintenance utilities (i.e., the functions described in this section).

INDEX

-A-

ABORT key 49, 53, 61, 62
Accessing the Interface 11
ADD ENTRY 44
Adjust , Window 64
Administrator , system 7, 10, 15, 74
ALTER 69, 75
ALTER global pad 69, 74, 79
Alter mode 40, 69, 75, 76
ALTER mode commands 72
Altering Menus 69
An Index , Structure of 53
ANY 34, 60, 61
arrow , dotted 36, 62
arrow , double-headed 65, 67
ASCII text files 21

-B-

B 17
Back global pad 17
Bars , Left Wall 65
Bars , More Above/ More Below 67
blank Index Editor screen 26
Booting 13, 50, 51
Bottom/Index Window 23
boxed item 14, 26, 37, 50
buffer , ZMACS 54
button , HELP 23, 69
button , LEFT mouse 50
button , middle mouse 67
BUTTON , MOUSE 14, 26, 29, 31, 32, 33, 34, 35, 36, 37, 44, 45, 50, 59, 60, 61, 62, 64, 65
Button Blip , Mouse 50

-C-

Cards, Wild 58
cartridge tape 7, 10
Change Edit Password 79
Change Menu Maintenance password 79
choice of indexing ONLY keywords 54
command , SELECT-U 49
CONTROL key 13, 40
Control-Abort 49
CONTROL-C 40, 69, 74, 75, 76
CONTROL-N 29, 53, 62
CONTROL-P 29, 53, 62
Creating Sub-Menus 73

-D-

Delete entry 43, 45
Disk Save 10
DISPLAY 50
Distribution Tape 6

-E-

Edit Existing Index selection 17
Edit mode 25, 44
Editing 17, 42, 63
Editing Options 43
EDITOR , INDEX 49, 50, 65
Entries , Find Index 33
entries , Index 21, 26, 31, 36, 42, 47
Entries , Inversions of Index 23, 31
ENTRY , ADD 44

entry , Delete 43, 45
Entry , Index 21, 23, 29, 31, 32, 33, 34, 36, 44, 45, 46, 62
ENTRY , MARK/ UNMARK 36, 62
entry , marked 36, 61, 62
entry , text 44, 45
entry , Undelete 46
error message 26, 34, 44, 45, 46, 50, 60, 61, 62, 63, 69
Existing File Selection menu 20, 39, 41, 42, 57, 72, 73, 75
Existing Index , Edit 42
Existing Index , Read 26
Exiting the Indexer 15
Explicit 42, 57
explicit master index file name 57
Expunge 47

-F-

features , TMC Indexer 52
file , text 29, 37, 54
File name 38, 42, 55, 56, 57, 58
file selection menu 39, 40
FILE , LOAD INDEX 26, 47
FILE , READ TEXT 29
files , ASCII text 21
files , multiple 57
Files , Reread Index 47
FIND 33, 34, 35, 60, 61, 64
Find , Incremental 61
Find Index Entries 33
FIRST 34, 35, 60, 61, 64
Flashing Screen 50
Font 72
form , inverted 31
Formatting Menu Items 72
Fundamentals 6

-G-

global pads 17, 77
Global Pads Menu 77

-H-

Hardcopy 63
HELP 49
HELP button 23, 69
HELP key 49, 53, 69
Help menu 17, 49
hierarchy , menu 39, 75
host , logical 9, 10
host name 6, 7 , 8 , 9
HYPER 13, 67, 69
Hyper-Scroll 67

-I-

INCREMENTAL 34, 35, 61
Index , Bottom of 67
index , master 53, 54, 57
Index , Save Modified 47
Index , Structure of An 53
Index , Top of 67
INDEX EDITOR HELP menu 23
Index Editor screen 21, 23, 42, 49, 65
Index entries 21, 26, 31, 36, 42, 47
Index Entries , Inversions of 23, 31
Index Entry 21, 23, 29, 31, 32, 33, 34, 36, 44, 45, 46, 62
INDEX FILE , LOAD 26, 47
Index generation mode 37
Index New Text 37

index window 23, 29, 64, 65, 67
Index , Edit Existing 42
Index , Read Existing 26
Indexer Editor screen 49
Indexer Parameters window 53
Indexer task options 14
Indexer's Existing File Selection menu 17, 26
Indexer's hierarchical menu system 17, 73
Indexer's interface 15, 17, 25, 49
Indexer's top level menu 12
Indexing , Multiple File 57
indexing ONLY keywords, choice of 54
Indexing Parameters 52, 54, 63
indexing process 38, 53, 55, 56
Inserting New Menu Items 72
Interface , Accessing the 11
interface , Indexer's 15, 17, 25, 49
Introduction 4
INVERSION, adding 44, 45
Inversion , Next 32, 62
Inversion , Previous 31, 62
Inversions of Index Entries 23, 31
item , boxed 14, 26, 37, 50
item , menu 40, 69, 73, 74, 76
Item , Selected Menu 72, 75
Item , Yank Last Killed Menu 75
Items , Formatting Menu 72
Items , Inserting New Menu 72

–K–

key , ABORT 49, 53, 61, 62
key , CONTROL 13, 40
key , HELP 49, 53, 69
key , LINE 76
key , META 40
key , REFRESH 50, 53
key , SCROLL 69
Keyboard , LISP Machine 13
keys , CONTROL AND COMPLETE 52
keys , META-CONTROL-~ 63
keys , CONTROL-N 29
keys , CONTROL-P 29
keywords , choice of indexing ONLY 54

–L–

Last Menu, Information on 77
Left Wall Bars 65
Line , Mouse Documentation 14, 16, 50
LINE key 76
LISP Listener 7, 13, 15
LISP Machine Keyboard 13
list , user (words/phrases to save/omit) 55, 56
Listener , LISP 7, 13, 15
literal file names 42, 58
Loading the Distribution Tape 6
Lock , Sheet 49
Logging In 6
Logging Out 15
logical host 9, 10

–M–

M , typing 62
maintainer , system 40, 41, 42, 55, 72, 76
MARK 34, 35, 36, 61, 62
MARK/UNMARK ENTRY 36, 62

master index 53, 54, 57
memory space 13
menu , Existing File Selection 17, 20, 26, 39, 41, 42, 57, 72, 73, 75
Menu , Global Pads 77
menu , Help 17, 49
menu , INDEX EDITOR HELP 23
menu , Indexer's top level 12
menu , mouse 23, 43, 50, 59
Menu , System 50
Menu , Top Level 18, 37, 41, 62, 65
Menu , Write Enable Last 77
Menu , Write Protect Last 77
Menu Editor HELP screen 71
menu hierarchy 39, 75
menu item 40, 69, 73, 74, 76
Menu Maintenance Utilities 77
Menu Maintenance Utilities screen 78
Menus , Altering 69
Menus , Persistent 49
Menus , Save Modified 41, 76, 79
message , error 26, 34, 44, 45, 46, 50, 60, 61, 62, 63, 69
message , More Above 67
message , More Below 67
message , READ TEXT FILE 29
META-A 72
META-C 72
Meta-Control-Abort 49
META-CONTROL-~ keys 63
META-F 72, 75
META-I 40, 72, 74, 76
META-K 72, 75
META-M 72, 73
META-X 72, 75
META-Y 75
middle mouse button 67
Middle/Text Window 21
mode , Alter 40, 69, 75, 76
mode , Edit 25, 44
mode , Index generation 37
Mode , Read-Only 23, 59
modified menus 40, 76
Modified Menus , Save 41, 76, 79
More Above/More Below Bars 67
Mouse 14
MOUSE BUTTON 14, 26, 29, 31, 32, 33, 34, 35, 36, 37, 44, 45, 50, 59, 60, 61, 62, 64, 65
Mouse Button Blip 50
Mouse Documentation Line 14, 16, 50
Mouse Menu of Operations 23, 43, 59
mouse pointer 14, 26, 29, 31, 32, 33, 37, 59, 60, 62, 64, 65, 67
Mouse Sensitive Regions 65
moused line 65
Multiple File Indexing 57

–N–

name , explicit master index file 57
name , File 38, 42, 55, 56, 57, 58
name , host 6, 7, 8, 9
names , literal file 42, 58
New Text , Index 37
Next Inversion 32, 62

-O-

ONLY keywords , choice of indexing 54
Operations , Mouse Menu of 23, 43, 59
Options , Editing 43
Other 42, 45, 57
OTHER WINDOW 64

-P-

pad , ALTER global 69, 74, 79
pad , Back global 17
pad , UTILITIES global 77
pads , global 17, 77
Parameters , Indexing 52, 54, 63
Password , Change Edit 79
password , Change Menu Maintenance 79
Persistent Menus 49
pointer , mouse 14, 26, 29, 31, 32, 33, 37, 59, 60, 62, 64, 65, 67
Previous Inversion 31, 62
process , indexing 38, 53, 55, 56
Process Errors 49

-Q-

QUIT 65

-R-

READ TEXT FILE message 29
Read-Only Mode 23, 59
REFRESH key 50, 53
Regions , Mouse Sensitive 65
Reread Index Files 47
Review 25

-S-

Save , Disk 10
Save Modified Index 47
Save Modified Menus 79
Screen , Flashing 50
screen , Index Editor 21, 23, 42, 49, 65
screen , Menu Editor HELP 71
screen , Menu Maintenance Utilities 78
SCROLL key 69
Scroll Mouse Alternatives 67
SELECT-L 13
SELECT-U command 49
Selection , Existing File 57, 69, 72, 75
selection , WINDOW ADJUST 64
space , memory 13
String 34, 35
Structure of An Index 53
system , Indexer's hierarchical menu 17, 73
system administrator 7, 10, 15, 74
system maintainer 40, 41, 42, 55, 72, 76
System Menu 50

-T-

tape , cartridge 7, 10
Tape , Distribution 6
Text 34, 44, 60
Text , Index New 37
Text , ZMACS Edit 47, 63
text entry 44, 45

text file 29, 37, 54
Text , Index New 37
TMC Indexer Features Description 52
TMC Indexer Interface 11
TMC Indexer Menu System 17
Top Level Menu 18, 37, 41, 62, 65
Top of Index 67
Top of Text 67
Top/Status Display Window 21
Troubleshooting 49
Tutorial 17, 26, 37

-U-

Undelete entry 46
Unmark 36
user list (words/phrases to save/omit) 55, 56
Utilities , Menu Maintenance 77
UTILITIES global pad 77

-W-

W 64
Wild Cards 58
Window , Bottom/Index 23
window , index 23, 29, 64, 65, 67
window , Indexer Parameters 53
Window , Middle/Text 21
WINDOW , OTHER 64
Window , Top/Status Display 21
window , ZMACS Editor 63
Window Adjust 64
Write Enable 77
Write Protect 77

-Y-

Yank Last Killed Menu Item 75

-Z-

ZMACS buffer 54
ZMACS Edit Text 47, 63
ZMACS Editor window 63